CHARLES UNIVERSITY IN PRAGUE

Faculty of Science

Department of Demography and Geodemography

REPRODUCTIVE BEHAVIOR AND ITS PATTERNS IN THE SOUTH KAZAKHSTAN REGION

Dissertation Thesis

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Prague 2012

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DISSERTATION THESIS

2012 **Aida Baigarayeva**

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Acknowledgments

First of all, I am grateful to the dissertation committee as well as to the faculty members of the Department of Demography and Geodemography: Prof. RNDr. Jitka Rychtaříková, CSc., RNDr. Tomáš Kučera, CSc., RNDr. Boris Burcin, PhD., RNDr. Jiřina Kocourková, PhD., RNDr. Květa Kalibová, CSc., RNDr. Dagmar Bartoňová, PhD., Doc. RNDr. Ludmila Fialová, CSc., RNDr. Olga Sivková, Ph.D. and Prof. Ing. Zdeněk Pavlík, DrSc. for their knowledge sharing, hard work, time and patience.

I would like to thank my thesis supervisor Prof. RNDr. Jitka Rychtaříková, CSc. for her invaluable guidance, professional opinions and advice as well as inspiring comments.

My special words of appreciation go to RNDr. Tomáš Kučera, CSc. who organized international study program, gave us opportunity to study abroad and to open new experience and prospects useful for our future careers. Furthermore, his help and encouragement were invaluable during the studying process.

It is also my duty to record my thankfulness to RNDr. Boris Burcin, PhD. who provided us with information technology knowledge as well as introduced us a lot of relevant computer programs.

I wish to express my sincere thanks to Doc. Milan Tucek, CSc. who led sociology knowledge as well as sample survey methodology.

I express my deepest gratitude to Kazakhstani teachers A. Yessimova and Z. Valitova for providing me data of the sample survey conducted in South and North Kazakhstan as well as supporting me in study and giving me comprehensive consultations.

I would like to thank JSC "Center for International programs" in Kazakhstan who gave me opportunity to study in Prague and supported it.

My special gratitude goes to Marta Mustafina . for her invaluable assistance with English grammar and to . Martin Kucera for his supportive and hard work related to documents needed.

And finally, I would like to also thank my family and friends, to one and all abundantly helped me for their unceasing encouragement and support. Words alone cannot express what I owe them for their encouragement and whose patient love enabled me to complete this study.

Reproductive behavior and its pattern in the South Kazakhstan region

Abstract

This study is focused on reproductive behavior issues in the South Kazakhstan region over the period from 1999 to 2010. The main objective is to contribute to the scientific cognition of reproductive attitudes, intentions and its realization among South Kazakhstani couples. The analysis is based on data collected for couples in the survey "Reproductive behavior of a family of Kazakhstan" held in the year 2007. In addition to that, trends in population development and impact of recent socio-economic changes on reproductive behavior in the selected region are studied. Differences in age, sex, ethnicity, place of residence as well as religious affiliation, educational attainment and respondents' incomes are considered in data analysis. The results of fertility decomposition method showed, that recent increase in fertility was predominantly caused by the factor of age-specific fertility rate. Factors of urban-rural difference and birth order were not significant. With regard to reproductive attitudes, intentions and its realization it was found that reproductive preferences among South Kazakhstani couples were devoted to a large family, while their reproductive intentions were focused on two-three children at most.

Keywords: reproductive behavior, reproductive attitudes and intentions, the South Kazakhstan region, fertility development

Abstrakt

Dizertační práce se zabývá problematikou reprodukčního chování v Jihokazašské oblasti Kazachstánu v období 1999−2010. Hlavním cílem práce je prozkoumání postojů a plánů párů žijících v Jihokazašské oblasti k reprodukci, přičemž tyto plány jsou porovnány s jejich skutečnou realizací. V empirické části práce, která se vztahuje k hlavnímu cíli studie, jsou analyzována data výběrového šetření „Reproductive behavior of a family of Kazakhstan", které bylo uskutečněno v roce 2007. Analytická část práce také zahrnuje studium populačního vývoje a vliv nedávných socio-ekonomických změn na reprodukční chování ve studovaném regionu. Analýza dat tak zohledňuje širokou škálu proměnných: věk, pohlaví, etnickou příslušnost, místo pobytu (venkov-město), náboženské vyznání, dosažený stupeň vzdělání a úroveň příjmů. Výsledky dekompozice změny intenzity plodnosti ukazují, že nedávné navýšení úrovně plodnosti bylo způsobeno především faktorem míry plodnosti podle věku. Faktory zohledňující místo pobytu (venkov-město) a pořadí narozeného dítěte se prokázaly jako signifikantní. S ohledem na reprodukční plány a postoje výsledky ukazují, že páry žijící v Jižním Kazachstánu sice preferovaly velké rodiny, nicméně jejich plány zahrnovaly maximálně dvě až tři děti.

Klíčová slova: reprodukční chování, reprodukční postoje a plány, Jihokazašská oblast, vývoj plodnosti

CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF ABBREVIATIONS

Abbreviation of theories, concepts and model used

1. FDT "First Demographic transition"
2. SDT "Second Demographic transition"
3. TPB "Theory of Planned behavior"
4. TACT model "Target, Action, Context, Time"
5. REPRO project "Reproductive decision-making in a macro-micro perspective"
6. RWA model "Ready, willing and able"
7. TCA "Theory of Conjunctural Action"

Surveys and organizations

1. DHS "Demographic and Health Surveys"
2. WFS "World Fertility Surveys"
3. UN "United Nations"
4. OECD "Organization for economic co-operation and development"
5. LISS "Longitudinal Internet Studies for the Social Sciences"

Demographic indicators

1. CBR "Crude Birth rate"
2. CDR "Crude Death rate"
3. GFR "General Fertility rate"
4. TFR "Total Fertility rate"

History and state

1. WWI "First World War"
2. WWII "Second World War"
3. USSR "Union of Soviet Socialist Republics"
4. CIS "Commonwealth of Independent States"
5. KZT "National currency of Kazakhstan (tenge)"

Chapter 1

Introduction

Sweeping changes of natality in Kazakhstan during the past quarter of a century attracted attention of social scientists as well as decision makers and politicians dealing directly or indirectly with the questions of demographic reproduction on both national and regional levels. These changes were also observed in the South Kazakhstan region, the most populated part of the country with the highest proportion of Kazakh ethnic group among the inhabitants and relatively traditional demographic behavior of its population. The highest overall fertility rates and population size among the regions of Kazakhstan have delegated the role of population reproduction center of the country to this region. However, the process of complex modernization observed on national level during the recent decades affected also the southern territories of the country. As a result, step-by-step erosion of a traditional way of life has taken place and reproductive attitudes and behaviors have been changed. Therefore, presented doctoral research identifies the extent of occurring changes in reproductive intentions and behavior.

1.1 Problem definition and relevance of the research

As a part of the modern era, the world population is gradually passing through the process of demographic transition characterized by the declining mortality and fertility. In this respect, Kazakhstan with its trends in population development is not an exception. Thereby to understand possible future demographic development and its consequences in Kazakhstan, it is necessary to grasp an essence of this transition and to specify at least its basic determinants. Without doubt, one of the determinants is a reproductive behavior which is reflected in reproductive attitudes and intensions.

Reproductive behavior which we can understand as a sequence of actions related to childbearing process or denial of a child's birth is examined as the key issue. To be more precise, reproductive behavior, its patterns and their differences among generations and couples, which were observed in South Kazakhstan from the earliest 1990s to the end of 2000s, are studied. The region of South Kazakhstan has been chosen for the research purposely. Firstly, during entire history this area remained the traditional part of Kazakhstan. Secondly, the region belongs to the most densely

populated regions in the country. Thirdly, a few demographic studies in the field of interest are focused on this region. Majority of the scientific work on reproductive attitudes and behavior is related to Kazakhstan as a whole or to East Kazakhstan (Aytkazina, 2004). Therefore, these circumstances underline significance of our research within the observed territorial unit.

With regard to South Kazakhstan, reproductive behavior has been partially explored by A. Yessimova (2006), a Kazakhstani historian who has been working on the topic of reproduction attitudes and intentions in Kazakhstan during the last ten years and by Kazakhstani social scientist Z. Valitova (2010). Nevertheless, the study of demographic changes in chosen region has still an exigency, namely, reproductive behavior and its consequences influencing fertility.

Besides the key-issue, we have identified several side problems. They are related to theoretical and empirical base which is going to be utilized during our research. This base is represented by the sources of statistical and survey data, methods of their provision and exploitation, and last but not least by selection of relevant theories and other concepts.

The research involves following objectives. Firstly, the study is going to understand and analyze couples' reproductive views and behavior today. Secondly, the role of modernization process in the South Kazakhstan region is going to be identified and whether and to what extent it influences reproduction. Thirdly, the linkage, possible coincidences or incompatibility between couples' reproductive thoughts and their realization will be uncovered. Finally, current fertility pattern in South Kazakhstan is going to be evaluated and examined by differential factors (urban-rural differences, ethnicity, marital and extramarital fertility, fertility by birth order). Identifying reproductive parameters (reproductive attitudes, intentions and behavior) of couples living in Southern Kazakhstan, comprehending current reproduction patterns and its changes uncover real fertility situation for stakeholders as well as decision makers. Besides that, it gives a chance to predict better future course of fertility process and its development in South Kazakhstan.

1.2 Research aims

The overall goal of the research is to contribute to the cognition of demographic reproduction in the South Kazakhstan region as well as in the entire country. The knowledge obtained, should help to make easier prospective estimates of fertility rates which are necessary for elaboration of a more reliable population forecast supporting effectiveness of management of social and economic development on local, regional and national levels.

Following this goal, our research is focused on identification and explanation of the existing trends and patterns of reproductive behavior observed among couples living in South Kazakhstan. Despite this we aim to reveal reproductive behavior of couples from the South region in oppose to couples of North Kazakhstan, because given regions are with respect to culture, traditions, ethnic distribution of population and demographic development (e.g. in the year 2010, the total fertility

rate in North Kazakhstan equaled to 1.94 live births per woman, and in South Kazakhstan 3.67 live births per woman (Demographic Yearbook, 2011) profound contrast.

The research focus and its aspirations are specified in following aims and research objectives.

1. To describe and analyze recent development trends in fertility, its intensities and patterns in the South Kazakhstan region on the background of their developments in the country.

2. To identify structural and developmental commonalities and differences in the reproductive thoughts and its realization among couples of South Kazakhstan within region and in comparison with North Kazakhstan.

3. To determine the extents and reasons of reproductive attitudes and behavior due to differential factors (urban-rural differentiation, sex and age differences, ethnicity and religious affiliation, educational attainment as well as financial income of respondents).

4. To assess possible impact of historical events and political changes from the beginning of 1990s as well as modernization process on the reproductive attitudes and behavior.

5. To analyze current situation of reproductive behavior in South Kazakhstan on the background of the country in order to be able to predict future fertility and its possible consequences.

To fulfill aforementioned aims, the study is based on data/information about reproductive behavior of couples in South Kazakhstan and its analysis. For the analysis we used statistical data from the Agency of Statistics of Kazakhstan and the Department of Statistics in South Kazakhstan as well as data collected from field survey in the North and South regions. Exploring these data methods such as demographic analysis, decomposition of fertility, Chi-square test and multinomial logistic regression are going to be implemented.

1.3 Research questions and hypotheses

Following research aims, we make an effort to answer the subsequent questions:

1. How did the fertility process develop in the South Kazakhstan region and Kazakhstan as a whole during the last decade?

2. What are structural and developmental regularities and differences in reproductive thoughts and behaviors of couples living in South Kazakhstan?

3. To what extent reproductive thoughts and realization differ among couples within South Kazakhstan? How do they differ in comparison with couples in North Kazakhstan?

4. What are the reasons of changing reproductive thoughts and behaviors in the given region?

5. How do the differences and changes in reproductive parameters mirror the changes in overall fertility?

6. What is the role of modernization process in reproductive thoughts and behaviors of respondents?

7. What kind of changes in fertility process can be expected in the region?

Based on the researched questions we construct speculative assumptions. The research hypotheses on reproductive behavior were formulated according to relevant demographic and social theories and concepts. The theoretical framework involves the demographic transition theory, theories of fertility (Caldwell, 1976, 2001; Becker, 1986 and Kohler, 2001) and concepts as well as theories directly related to reproductive intentions and its behavior (Ajzen, 1991; Lesthaeghe and Vanderhoeft, 2001). The hypotheses are related to particular research aims and questions mentioned above.

1. Fertility development in South Kazakhstan during last decade has led to convergence between the region and the entire country.

2. Reproductive attitudes and behaviors of respondents living in South Kazakhstan maintained more "traditional" in comparison with declared attitudes and behavior of respondents from North Kazakhstan.

3. Reproductive thoughts and behaviors vary due to differential factors (urban-rural differentiation, sex and age differences, ethnicity and religious affiliation, educational attainment as well as financial income of respondents) as follows:

a) Reproductive thoughts and behavior of rural couples are more traditional (related to large family, more children) than urban couples.

b) According to sex differentiation, it is expected that females (wives) prefer fewer children than males (husbands) due to difficulties related to each birth.

c) With regard to age, elder respondents keep traditions and values orientation which they adopted in Soviet time. Therefore, they prefer more children than those who were born in the time of perestroika and after.

d) Analyzing two ethnic groups (Kazakhs and Russians) we expect, that Kazakh couples will plan to have more children than Russian couples and indeed they will have more children.

e) Regarding religious affiliation of respondents', hypothesis is constructed in a similar way as the previous one. It is assumed that Muslim families will plan to have more children than Christian families and indeed they will have more children.

f) Take into consideration factors proposed in the demographic transition theory we expect that highly educated respondents will show reproductive attitudes toward small family size.

j) With respect to economic factors in reproductive behavior (Becker and Lewis, 1973; and Caldwell, 2001) we expect, that high-income families assume to have fewer children than families with low income. In addition, in reality they will have fewer children.

4. Modernization process, more accessible education and socio-economic changes have impact on decreasing reproductive parameters (reproductive attitudes, intentions and behavior).

5. Due to decreasing reproductive parameters, fertility level declines in the region and consequently it influences the national fertility level.

Specified aims, questions and hypotheses have been analyzed utilizing appropriate methods presented in Chapter 4.

1.4 Structure of the research

Structure of the thesis is first of all determined by its logical division into two basic parts. The first part which is labeled as a "technical" consists of four chapters: introduction, literature review, theoretical framework and chapter devoted to methodology and used data.

The introductory chapter 1 deals with the research problem specification and its relevance. The problem specification is framed by the main key issue, reproductive behavior and its patterns. The relevance of the research is based on knowledge deficiency and needs to uncover reproductive behavior of individuals and couples living in South Kazakhstan. Being an exordial part, introduction is focused on research aims as well as on questions and hypotheses. The aims are formulated on the basis of research goal to contribute the cognition of reproductive parameters and their realizations in South Kazakhstan. Meanwhile questions and hypotheses follow the aims specified above in order to expose significance of the research and to build its solid logical framework.

Literature review, chapter 2 involved in a "technical" part provides a basic overview of relevant literature which was explored during the research project. In addition, it illustrates the relevance of the work. The presented literature overview is organized as follows: literature based on theoretical concepts and literature which was used to understand and compare survey results and publications of Kazakhstani authors studying similar demographic question.

Theoretical frameworks in chapter 3 are focused on the description of theories and concepts used in the work. In the theoretical part, special attention is given to the demographic transition theory and theories of fertility. For better understanding of social context and determinants relevant in reproductive behavior, in its formation and development, we rely on the theory of planned behavior (Ajzen, 1991) and models related to reproductive attitudes (Lesthaeghe and Vanderhoeft, 2001), intentions (Philipov, Thévenon, Klobas, Bernardi and Liefbroer,2009) and their realizations. Chapter 4 contains information about applied methodology and data. This chapter properly relates to so-called "technical" part of research structure, because it describes advantages and disadvantages, quality and availability of used data and methods. Furthermore, formulas of method utilized in estimations are also involved. With regard to data there is methodological description of a sample survey, its design and parameters as well as methods of selection of respondents and last but not least explanation of methods especially used for understanding effects of reproductive attitudes and behaviors of respondents.

The second part of the research structure, so-called the body part of the thesis, is represented by the key chapters dealing with the main subject of the research. This part consists of three chapters, which have several sub-parts. The chapter 5 is focused on fertility analysis of Kazakhstan starting with presentation of the country in demographic context. The chapter 6 presents fertility analysis of data for South Kazakhstan. The most important chapter of the body part is chapter 7, which involves results of the survey and the analysis of the empirical knowledge of reproductive thoughts

and their realizations in given regions. Chapter 7, as the principal part of the thesis, covers fundamental analysis and discussion of ideal, desired, planned and real numbers of children among the couples living in South and North Kazakhstan which were obtained by the sample survey.

The last part of the study is devoted to conclusion and results discussion. Furthermore, the final pages of the dissertation are assigned to appendices which also provide reliable information related to research problem. It is also necessary to note, that the structure of listed chapters is even complicated due to several sub-chapters which reflect adopted research questions and hypothesis.

Chapter 2

Literature review

The question of reproductive behavior is not new in demographic science as well as in social science. Since fertility has been declining in developed countries and most of developing countries from the early 1960s, the fertility subject and consequently question of reproductive behavior was broadly involved into scientific discussions and was deeply analyzed. The analysis of changing reproductive behavior towards small family size always had an aspiration to explain phenomenon of declining fertility theoretically. In the first demographic transition F.W. Notestein (1953) claimed that the changes in reproduction behavior were caused predominantly by socio-economic factors as "rapidly developing technology" and accessibility of education especially in urban areas. This approach of understanding has been continuously and widely examined in the second demographic transition based on value orientations (van de Kaa, 2001). Firstly the concept was developed for northern, western and southern Europe (Surkyn and Lesthaeghe, 2004). Later on, scholars have been specified reproductive changes by broad range of influential factors (Jones, 2008).

However, an economic approach to fertility from a perspective of child's costs has been already known in economics theory (Becker, 1986), economic aspects of changing reproductive behavior have been still frequently stressed. Economic way of analysis in reproductive behavior occurred not only for developed counties, but also for developing countries (Caldwell, 1976 and 1978) in respect to globalization process (Caldwell, 2001) and childbirth controlling (Caldwell, 2004). Recently, scientists pay attention to reproductive preferences (Bongaarts, 2001) which rapidly changed in postmodern world (Bachrach, 2001). Changes in reproductive preferences and intentions have significant impact on realization of reproductive behavior (Ajzen, 2010). For instance, preferences and intentions determine timing and quantum of fertility (Bosveld, 1996). All listed approaches related to reproductive behavior and its changes are dated to the second half of the twentieth century (Casterline, 2001).

Changes in reproductive behavior are in general identified as changes in a sequence of actions related to childbearing process (Borisov, 1976). These actions are inseparably linked to reproductive attitudes and intentions that rapidly changed in the beginning of the twenty first century. The most visible change was documented in number of wanted children, which

significantly declined. In addition, research focused also on couples' agreement and disagreement with respect to intended family size (Sobotka, 2011).

Rapid changes in reproductive intentions and its realization towards fewer children, one child or even no child, forced scientists and decision makers to understand it and identify theoretical foundation of this behavior. With regard to theoretical base, widely used approach has been the theory of planned behavior (TPB) offered by I. Ajzen (1991). This concept was modified into TACT model (target, action, context, time) (Ajzen, 2010). But it is necessary to note, that it is not the only concept which explains lines from reproductive attitudes to intention and eventually to behavior. Well-known models are also RWA models (ready, willing, able), for which A. J. Coale (Lesthaeghe and Vanderhoeft, 2001) provided three preconditions. His innovations were further developed by R. Lesthaeghe (Lesthaeghe and Vanderhoeft, 2001). Furthermore, reproductive behavior and its interactions with reproductive attitudes theoretically have been also explained by K. McDonald (1997) in his "Life history theory and human reproductive behavior: environmental/contextual influences and heritable variation". His work stresses the intergenerational line between parents and their offspring, as well as economic and cultural foundation of the family (McDonald, 1997). Conceptual explanation of changes in reproductive attitudes and behavior through family background was also identified by Russian scholars: A. I. Antonov, V. A. Borisov, V. N. Arkhangelsky and V. M. Medkov (Antonov, 2005). They noted that number of children in family is reduced as a result of family destruction perceived as a social institute. Considering family or partners relations, P. McDonald (2000) theoretically conceptualized that increasing or decreasing number of children to some extent reflects gender equality or inequality in a particular society.

Issue of reproductive attitudes and their realization was analyzed and formulated not only into theories and concepts, but it has been interpreted through empirical project concerned by reproductive decisions. For instance, the project Reproductive decision-making in a macro-micro perspective (REPRO), conducted by D. Philipov, O. Thévenon, J. Klobas, L. Bernardi and A. C. Liefbroer (2009) was based on surveys (the teamwork), which conceptually and schematically took into account transition in reproductive behavior (Sobotka, 2011). Surveys on reproductive preferences, intentions and behavior have always provided empirical knowledge which has contributed to formulation or specification of theoretical concept. Recently, innumerable surveys covered by socio-demographic organizations as well as by scientists themselves are realized. One of the surveys which provide data related to reproductive behavior is World Fertility Survey (WFS). The survey is done for developing world and collects information about economic factors in family size decisions (Arnold, Fred and Pejaranonda, 1977) as well as fertility preferences and desired family size (Kantrow, 1980). Furthermore, Demographic and Health Surveys (DHS) periodically perform solid analysis of reproductive preferences, intentions and their realization in the developing countries. Given surveys are based on not only females' preferences, but males as well (Ezeh, Seroussi and Raggers, 1996). In addition, they are focused on reproductive ideals that usually differ

from preferences (Westoff and Bankole, 2002). This practice was also utilized in surveys done by the organization for economic co-operation and development (OECD) in 2010 and by Eurostat, which deals not only with ideal number of children, but with reproductive ideals in general. Therefore, Eurobarometter surveys provide also information about e.g. ideal age to become a parent (Testa, 2006). In addition to that, LISS surveys (Longitudinal Internet Studies for the Social Sciences) involve approach of so-called "second choice", which contains personal ideals and alternative preferences (Hin, Gauthier, Goldstein and Buhler, 2011). The reproductive preferences and intentions are also inseparable part of surveys based on couples agreements or disagreements (Thomson and Hoem, 1998) that are carrying out in the form of ad-hoc survey almost in each country these days (Chromkova Manea and Fucik, 2011).

As regards surveys held in Kazakhstan in the second half of the twentieth century, we can mention widespread surveys of reproductive behavior implemented in each Soviet Republic. Their results have been principally collected into three publications presenting several scientific articles focused on the main questions of reproductive ideals, preferences and its realization (Volkov, 1968), (Belova, 1975), (Rybakovsky, 1986). Those surveys were done for Soviet Kazakhstan as a whole without regional specification. Surveys of reproductive behavior conducted in South Kazakhstan in time of socio-economic growth in the country (mid of 2000s) and their results are mainly presented in demographic articles (Yessimova, 2005), (Valitova and Yessimova, 2006). Furthermore, considering reproductive behavior of couples living in South Kazakhstan, it is necessary to mention N. Golovin's work (2004), who specified society into generations according to historical decades, because given classification has been adopted in the analysis of respondents.

To carry out research on reproductive behavior for entire country, legislation in force has to be taken into account too. "The law on reproductive rights and safeguard for its implementation" was adopted in 2004 and then, in 2009 it was conjoined into legislation related to health of the population and health care system (newspaper "Kazakhstanskaya pravda", 2009). Due to relatively short period of Kazakhstan independence, Kazakhstani legislation suffers by several deficiencies, therefore most essential documents have still undergone the process of their modification or they are even renewed totally. Absence of unique base generates some difficulties not only to study the subject of interest, but for general public to follow all changes if they are aware of them.

In sum, reproductive behavior of the Kazakhstan population has been studied through fertility issues predominantly by Russian and Kazakhstani scholars. Their works, which are focused on fertility development (Sherbakova, 2009; Alekseenko et al, 2011) on government policy in fertility issues (Yessimova, 2006) and problems related to the process of giving birth (Agybayeva, 2006) as well as on problems pertaining to reproductive health of Kazakhstani females (Zhumatova and Lokshin, 2011) provide us invaluable contribution to our knowledge of demographic development. Furthermore, considerable contribution to the study of fertility by ethnic factor has been found in Agadjanian's works (1999, 2008) that contain analyses of ethnic differences in marriage and

fertility in Kazakhstan. His research dealt also with interaction between fertility dynamics and economic growth in Kazakhstan (Agadjanian, 2012).

Narrowing the topic to reproductive behavior of the population in South Kazakhstan, we can name only aforementioned scientific works done by A. Yessimova (2005) and Z. Valitova (2010). It is obvious, that the list of literature focused on reproductive behavior in South Kazakhstan is not so long. Therefore it seems convenient to grasp the topic from an additional angle of view. For this purpose data and information gained from the Agency of Statistics of Kazakhstan and from the Department of Statistics in South Kazakhstan are used. Valuable sources are mainly two published reports "Itogi perepisi naseleniya 1999 goda po Yuzhno-Kazakhstanskoy oblasti" (Smailov, 2001) and "Yuzhno-Kazakhstanskaya oblast' i ee regiony" (Shaymanov, 2008).

Although chapter devoted to literature review revealed that relevant information sources related to studied problem exist, especially at regional level literature is not so abundant. With this respect, it seems reasonable conclude that research considering regions should be conduct from theoretical as well as empirical perspective.

Chapter 3

Theoretical framework

Theoretical and conceptual foundations are the main basis of each research. Therefore, this chapter is focused on theories and models directly related to the main subject of the study and the analysis of reproductive issues. Besides other things, the demographic transition theory and theories of fertility are described and discussed.

3.1 Conceptual framework

Reproductive behavior and its patterns are very important indicators resulting in concrete levels and structures of observed fertility. Originally the term "reproductive behavior" came from biology (Antonov, 2003). Precisely speaking, it came from ethology, the sub-discipline which studies animals' behavior. Later on, researchers and scientists accepted the term "reproductive behavior" also for humans as part of sexual behavior forming reproduction pattern through fertility. In 1970 V. A. Borisov (1976) defined reproductive behavior as a sequence of actions having impact on birth or denial of a child's birth in marriage or out of marriage.

In the second half of the twentieth century, reproductive behavior as a subject took special attention as the total fertility rates declined in developed countries as well as in most of the developing countries. Therefore, the reproductive intentions and preference in family planning started to be examined not only by scientists and policymakers separately, but by whole teams of specialists. They in collaboration with social and demographic organizations such as WFS, DHS and OECD carried out surveys. The surveys have been done to obtain data about real reproductive pattern as well as about preferences and reproductive plans which are helpful to predict possible future fertility development.

Surveys implemented by demographic organizations had attempted to understand changes in reproductive preference, but with regard to the years of their realization, they had distinctive goals and purposes. For instance, fertility surveys carried out in developing countries in 1970s by WFS were focused on married females and their reproductive preferences with respect to their socio-demographic characteristics as education, urban/rural residence and duration of marriage (Kantrow, 1980). Similar survey was held by the DHS organization in developing countries in the 1990's.

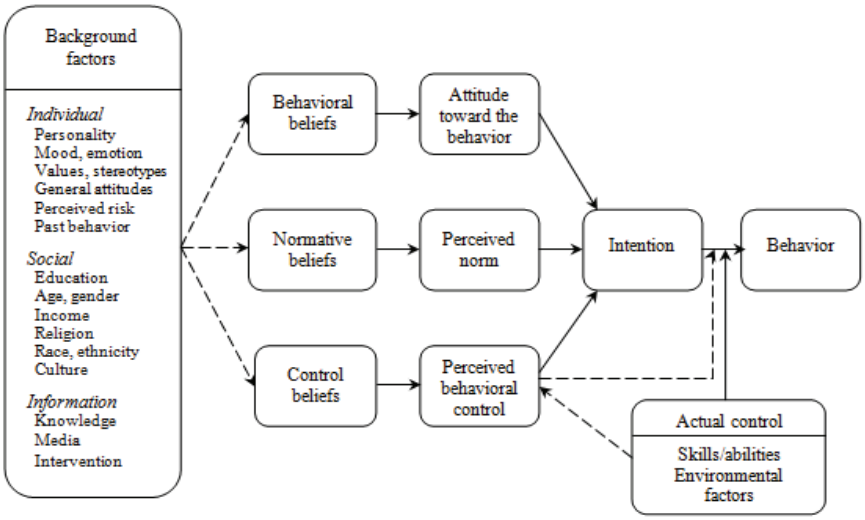
Although given surveys provided relevant data and information, especially aforementioned WFS survey was improved by additional studied factors as male preferences and family type. It was recognized, that male's reproductive preferences in developing countries are important due to their dominant role in fertility decision making (Bankole, 1995; Casterline et al., 1997).

To understand current reproduction pattern, it is necessary to perform in depth analysis, because modern lifestyle is related to various factors which either directly or indirectly influence desired as well as planned number of births and its realization. But the range of influential factors is in core enormous, because it could contain factors associated with for instance, economic globalization, urbanization as well as structural modernization, education and religious affiliation, cultural transformation both at individual and aggregate level (Lesthaeghe, 2002). The wide range of factors indicates that the study of reproductive behavior is beyond the scope of demographic context. For example, in sociological context reproductive behavior was analyzed through modernization theories that determine changing values in lifestyle of people as well as in family and reproductive preferences (Giddens, 1990; Inglehart, 2005).

Fertility decline as a fact became an important issue for demographers, sociologists and decision makers. Therefore, they have attempted to theoretically structure interaction among reproductive attitudes, intentions and behavior. A special attention takes a theory of planned behavior proposed by I. Ajzen (Professor of Psychology at University of Massachusetts) published in the book chapter "From intentions to actions: A theory of planned behavior" in 1985 (Ajzen, 1985). The whole theory is built on the context of reproductive attitudes and behavior. Recently, it is accepted by demographers, sociologists, psychologists as well as policymakers in Europe. For instance, in the year 2010 conference with the title "From intentions to behavior: reproductive decision making in a macro-micro perspective" was organized by the Vienna Institute of Demography of the Austrian Academy of Sciences. (Testa, Sobotka and Morgan, 2011).

Schematically the main points of Ajzen's theory are based on individual, social and informative factors. Those factors to some extent have an impact on behavioral, normative and control beliefs of people. Having interrelation they from attitudes, normative beliefs and perceived behavioral control to intentions and then to behavior what is depicted in figure 1.

Fig. 1: Schematic of the Theory of Planned Behavior (TPB)



Source: suggested by Ajzen and Fishbein (2010)

As all theories, the TPB has been discussed and afterwards four improvements to fertility research were adopted: 1) the postulation of a clear intent preceding the reproductive behavior, 2) the interdependent nature of fertility outcomes which require a series of decisions interacting with other life behaviors 3) the developmental nature of intentions that may change over individuals' life course, and 4) the role of macro social context in which individuals and their intentions are formed (Morgan and Bachrach, 2011). This theory for better understanding of transition from reproductive attitudes to behavior was presented in so-called the TACT model (Ajzen, 2010). According to proposed examples of reproductive behavior the sequence is follows: 1) giving birth (action) to a child (target) with my current partner (context) and with proposed particular time of implementation (time). I. Ajzen (2010) proposed the second scenario of this model in case if there is absence one of the sequence, although reproductive intention takes place: 2) giving birth (action) to a child (target) with no context and time specified, the third way follows 3) children (target) with no action, context or time mentioned.

Nowadays the theory of planned behavior is used widely by researchers who deal with reproductive intentions and behaviors. However, it was not the first attempt to theoretically structure reproductive behavior. The model based on A.J. Coale's preconditions and developed by R. Lesthaeghe explains line of behavior in RWA concept: 1) readiness implies that the new behavior must be advantageous (conscious cost, benefit calculus), 2) willingness contains that behavior must be ethnically acceptable (religious and moral legitimacy) and 3) ability there are must be technical means for its realization (material, legal, organizational, often at macro level).

This way of reproductive behavior answers changes over time and fits to modernized world (Lesthaeghe and Vanderhoeft, 2001).

With regard to reproductive behavior and changes over time it is necessary to mention TCA (Theory of Conjunctural Action) model, which is based on Sewell's dual structure. The model was developed by J. A. Johnson-Hanks, Christine A. Bachrach, S. Philip Morgan and H.P. Kohler (2011). In collaboration with other scholars they theoretically analyzed reproductive behavior and its changes over time considering many social aspects: historical, traditional, ethnical, political, gender and class differences as well as macro-micro (in society and individualistic) perspective of individualistic behavior, eventually shaping social action. Alongside with TPB, this (TCA) theoretical concept considers reproductive behavior discussed in REPRO project (reproductive decision making in a macro-micro perspective). Both models are based on social and behavioral aspects, although, TPB is narrowed as it is depicted in scheme (fig. 1) above.

Theoretical understanding of reproductive behavior took place in Soviet countries as well in the earliest of 1970s. V. A. Borisov, L. E. Darsky and V. I. Kozlov developed theory of reproductive behavior (Antonov, 1986) which was criticized due to its either voluntaristic or deterministic framework (Gimenez, 1979). Later on, a conceptual foundation of changes in reproductive attitudes specified by destruction family as a social institute was provided by A. I. Antonov, V. A. Borisov, V. N. Arkhangelsky and V. M. Medkov (Antonov, 2005).

In addition to that, the life history theory, which was firstly applied in biology, was developed K. McDonald (1997) also for human beings. The model is known as the model of life history theory and human reproductive behavior. According to this model, reproductive behavior depends on many factors such as intergenerational transmission, the environmental adversity tends, the variation in intelligence and mental ability of individuals as well as family and obvious a social environment (McDonald, 1997).

Analyzing reproductive preferences and behavior of couples to some extent fits the conceptual framework proposed by P. McDonald (2000). He specifies differences in reproductive behavior caused by gender equality or inequality. McDonald claims that so-called "traditional" couples (where male is breadwinner) have more children than, couples where partners have relatively equal rights (McDonald, 2000).

Reproductive behavior is a complicated issue therefore it is unrealistic to develop a unique theory that would answer to all changes in reproductive preference and intentions as well as its implementation around the world. However, reproductive aspects and features, which are discussed in aforementioned theories and models, are incorporated into reproductive changes of preferences and behavior documented for Kazakhstani population.

Regarding theory of planned behavior, there is no doubt, that reproductive attitudes, normative beliefs and perceived behavioral control determining the intentions are relevant for reproduction behavior in Kazakhstan. But with respect to model characteristics, it seems that in case of Kazakhstan social background is more important than individual. The K. Mc. Donald models fits to

Kazakhstani reproductive behavior by the intergenerational transmission base and family ties system.

In the national level in Kazakhstan there is no theory or models carefully elaborated, though we accepted a "Legislation on reproductive rights and safeguards to implement them" in 2004. According to this legislation, individuals have reproductive rights and a freedom of choice in preferences and plans of the number of children and the time they are born, whether within marriage or outside marriage, birth intervals. Furthermore, the law also involves necessary to preserve the health of mother and child. State undertakes to take care of maternal and child health.

In addition, during 2000s government developed and accepted not only legislations but also supporting program for giving birth (2003) and the concept of population policy and family strengthening (2009). These concept and program aimed to support couples in childbearing and improve social conditions, especially in provided health care. Thereby, since 2003 there are also subsidies for women with child/children provided by lump sum for childbearing process and flat rates which are paid per month until the first birthday of a child.

3.2 Demographic transition theory

The demographic transition theory is a fundamental and classical concept describing the transition of population from traditional to modern, which is characterized by lower level of fertility and mortality. Recently, the conventional demographic transition theory has been extended by the theory of the second demographic transition. Their main features and differences are discussed in following subchapters.

3.2.1 First demographic transition

The first piece of work in English literature issued on the topic of the demographic transition theory was published in 1929. W. Thompson, the author, classified three different types of countries according to their developments of fertility and mortality (Kirk, 1996). The curious fact is that almost similar typology occurred in the work of A. Landry who specified three stages of population development: primitive, intermediate and contemporary. In addition, he was successful in explanation of reasons causing mortality decline. In case of fertility the factors remained with exception of contraceptive use disguised. (Kirk, 1996). Nevertheless, the demographic transition as a theory was developed by F.W. Notestein in 1953. He analyzed stages of population transition, predicted possible scenario in mortality and fertility development and even determined reasons of changes (Notestein, 1953).

According to F.W. Notestein (1953), the first stage of population transition, which lasted for centuries, is characterized by high mortality and fertility levels and minimal population growth with very little change in population size. High mortality was a result of low living standard, famine and wars as well as infection diseases. Meanwhile fertility was higher as a response of high mortality

that caused by aforementioned reasons as well as undeveloped medical system and poor nutritional diets. (Poston and Bouvier, 2010).

The second stage of the demographic transition theory was characterized by decline in mortality documented in developed countries. This occurred as a result of industrial revolution and modernization process, which influenced living conditions. Medical system as well as nutritional diets was improved. But it necessary to note, that while mortality declined, fertility maintained at high level. Therefore, this stage of development is also specified by significant population growth (Poston and Bouvier, 2010).

Nevertheless, fertility had been also affected by the modernization process, therefore the third stage was possible to identify by fertility decline which occurred in comparison with mortality a bit later (Notestein, 1953). F.W. Notestein (1953) claimed that pre-transitional society was a good ground for high fertility, in spite of the fact that industrial world influenced socio-economic conditions which had impact on fertility, e.g. place of residence (more frequently urban area), education, cost of children, etc. In sum, in the third stage while fertility declined sharply, mortality remained at low level.

In the final stage, which some authors called as a stage of "incipient decline", mortality and fertility remained at lower levels (Poston and Bouvier, 2010) what started in West Germany than continue in Eastern Europe. Regardless of major criticisms related to precise prediction of population transition (Kirk, 1996), there is need to mention that the demographic transition theory is unique concept capturing features of population development over last centuries in developed world.

3.2.2 Second demographic transition

In the mid of the 1960s, fertility started to decline and in some countries had fallen even below replacement level due to so-called "new" demographic behavior. This evidence required a theoretical base which would contribute to our understanding of given population change and especially what factors or reasons caused that. These issues were widely analyzed and then formulated in the theoretical concept of "the second demographic transition". The concept was formulated by R. Lesthaeghe and D. Van de Kaa in the year 1986. This concept (SDT) is predominately focused on explanation of fertility decline. In comparison with the FDT, in this concept change in fertility is seen in perspective of altruism, individualism and changed values over time (Kuijsten, 1995). These new paradigms had determined so-called "modern" preferences of marital and reproductive behavior that had been shifted from "classical" (family, marriage, birth within marriage) to "modern" (different type of conjugal unions, birth outside marriage) and required a theoretical base of it understanding.

The main features of demographic behavior were proposed in the SDT as follows: 1) the shift from the "Golden Age of Marriage" to the dawn of cohabitation, which is mirrored in marriage postponement and increasing number of unmarried relationships , 2) the shift from the era of king-

child with parents to that of king-pair with a child, what indicates decline in fertility below replacement level, 3) the shift from preventive contraception to self-fulfilling conception, which is consequently relate to rising proportions of illegitimate births, 4) the shift from uniform to pluralistic families and households that influence declining average size of households, but increasing variety of household types (Van de Kaa, 1987). From these characteristics it is evident that "new" behavior is more individualistic and oriented on life values.

Changes in value orientations have been thoroughly studied by R. Lesthaeghe. He summarized them into following characteristics: 1) secularization that implies disappearance of religious service attendance and then the abandonment of traditional religious belief and eventually the decline in individual religious sentiments (Surkyn and Lesthaeghe, 2004). Furthermore, there is an importance in 2) egalitarianism that stresses gender equality, tolerance to all minorities including sexual and rejection of class distinctions (Lesthaeghe and Neidert, 2006). Besides that, 3) accentuation of expressive values that showing an enlarged preoccupation with individuality and self-actualization (Lesthaeghe and Neidert, 2006). These are the main postulates specified by R. Lesthaeghe in understanding of the SDT, although he had developed several of them (Lesthaeghe and Neidert, 2006). Each of these characteristics exposes that fertility decline is related to modernization process which identifies social, economic and moral changes.

3.3 Fertility theories

The stance of distinguishing fertility theories by economic and noneconomic approaches was offered by H.P. Kohler (2001) and for the consistency in this chapter it has been also adopted in this work.

3.3.1 Economic approach in fertility theories

Fertility research has been a comprehensive issue, because changes in fertility do not depend only on one or two particular factors, but it is always a combination of economic, social, cultural, religious and individual backgrounds. Therefore, scholars have been theoretically analyzing fertility through the prism of different basis. This sub-chapter looks on fertility from an economic perspective.

A basic economic approach to fertility, which has to be mention, is work of G.S. Becker and R. J. Barro (1986), who analyzed so-called "parents altruism". They examined how parents' utility depends on the number and "quality" of children. This link was specified in utility function with respect to consumption, fertility, and number of offspring in all generations. This theoretical concept was formulated in "Altruism and the economic theory of fertility" (Becker and Barro, 1986).

The economic approach in fertility is not always explained on the base of altruism and "quality" of children, for instance, in developing society the demand for children at household is considered

as a possibility for parents to maximize their lifetime utility (Schultz, 1997). Furthermore, economic analysis takes into account s quality-quantity of children through the system of incentives in developing countries (Rosenzweig, 1990).

Differences in living standard of individuals are specified in economic theories of fertility by developed and developing countries, traditional and modern society. Such distinguishing is well analyzed in the theory of fertility by J.C. Caldwell (Caldwell, 1976) who used the concept of so-called "economically rational decision". This concept is based on intergenerational wealth flows between parents and children. These flows in traditional society run from children to their parents, therefore parents intend to have large family, whereas in modern society flows are from parents to children, what motive them to have fewer children or even one (Caldwell, 1976). This theoretical concept is similar to G.S. Becker's approach of "quality and quantity of children", but there is no division to modern and traditional society. Because Kazakhstan is developing country, it seems reasonable to utilized Caldwell's approach rather than Barro-Becker concept in our study.

3.3.2 Noneconomic approach in fertility theories

Noneconomic approach in fertility theories is based on changes in reproductive behavior due to social, cultural, religious, familial and individual base. It should be noted that noneconomic approach is rather conceptual than theoretical, because there are many concepts and models which present interactions between fertility and various aspects (social, cultural and etc.).

Theoretically social factors in reproductive attitudes, behavior and its consequent fertility have been well presented on the base of value orientations through globalization, urbanization and modernization, education and religious affiliation, cultural transformation and individuality by R. Lesthaeghe (2002). In his further works interaction between reproduction and value orientations showed, how the rise of individuality, unconventional civil morality and ethics as well as companionship and unconventional marital ethics influence fertility decrease (Surkyn and Lesthaeghe, 2004). These conceptual foundations substantially and in details encompass different prisms (social, cultural and etc.) of modern life indicating changes in fertility.

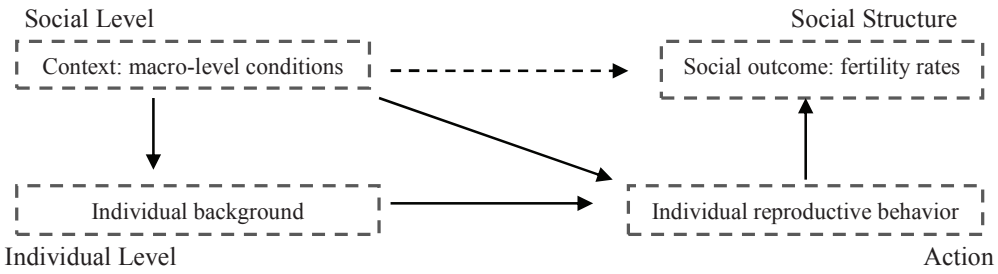
It should be noted, that social scientists to a great extent have analyzed dependence of social changes and "new" life as well as reproductive values through modernization process, which is determined by variety of family forms with no conventional ties (Giddens, 1990; Inglehart, 2005). Their interactions became relevant in demographic study, because fertility transition is identified by development level (Bongaarts and Watkins, 1996). Considering social interactions three levels of aggregation were defined: 1) personal networks connect individuals, 2) national channels of social interaction, such as migration and language which connect social and territorial communities within a country and 3) global channels, such as trade and international organizations, which connect nations within the global society (Bongaarts and Watkins, 1996). Specifying these levels J. Bongaarts and S.C. Watkins (1996) expressed independent social influence that affects reproductive behavior.

The issue of social interactions in fertility changes was classified for fertility analysis in developing countries into elements such as family systems, social classes, lineage groups and political and administrative structure. It seems that in case of developing countries social characteristics are encouraging high levels of fertility or its social control (McNicoll, 1980). This practice of social interaction influence has been thoroughly analyzed in different countries by M.R. Montgomery and Casterline (1993, 1996 and 1998). Besides other things, they found that also personal network can play significant role in reproductive attitudes and behavior (Montgomery and Chung, 1998).

Social interactions, status and behavior that appeared among relatives or surrounding society to some extent have influential effect on individual also in case of reproduction (Coleman, 1990). Moreover social networks have impact on reproductive preferences (Freedman, 1997) and they are even more significant than official or state programs (Westoff and Rodriguez, 1995).

Social foundation always played important role in particular society, e.g. cultural, traditional, religious, familial and developmental factors. These factors (plus economic as well) identify society per se and its conditions that have been analyzed on the base of REPRO project through macro-micro perspective of fertility (Testa, Sobotka and Morgan, 2011). The importance of this project is related to "macro" conditions. They do not affect fertility directly, but indirectly via decision of individuals and "macro-micro" link. Schematically scholars, M.R. Testa, T. Sobotka and S. Philip Morgan (2011) presented a macro-micro model of fertility with horizontal (macro) and diagonal (macro-micro) links depicted in (fig. 2).

Fig.2: A macro-micro model of fertility



Note: inspired by Coleman 1990

Source: M.R. Testa, T. Sobotka and S. Philip Morgan, 2011

The diagonal line indicates that fertility depends on myriad social, cultural, individualistic factors. Nowadays, decline in fertility is no more general or state question, because individualism has steeply risen. Therefore, present studies of reproductive behavior have to thoroughly consider each factor (social, individualistic and etc.).

Aforementioned theories and concepts deal with reproductive behavior and fertility changes from different prisms. However, it is obvious that current knowledge of reproductive behavior is not

marginal, still the work is not done, because there is "the absence of any central guiding theory on the relative importance of childbearing in women's lives" (Hakim, 2003).

Chapter 4

Methodology and data

The methodological part is essential and technical foundation of the thesis that presents data and its analysis, methods of exploitation and provision of data. The main purpose of this chapter is to discuss data, its availability and quality as well as to explain step by step the methods used. Working with reproductive behavior we based on demographic methods, namely, decomposition of fertility and statistic method of multinomial logistic regression.

4.1 Data availability

The study used data from the Statistical Agency of the Republic of Kazakhstan covering years from 1991 to 2011 in descriptive analysis of demographic situation in Kazakhstan as well as in its South areas. The analysis of demographic situation of Kazakhstan was carried out in respect of neighboring countries, therefore it required to use data from the State Statistics Committee of the USSR, the population census of USSR in 1989 and data from the Statistical Committee of CIS. Those sources helped to analyze and reveal position of Kazakhstan in demographic context.

The analysis of demographic situation in South Kazakhstan was totally based on the data gained from the Statistical Agency of the Republic of Kazakhstan and from the Department of Statistics in South Kazakhstan covering years from 1991 to 2011. The data for both analyses (Kazakhstan and south region) of demographic situation were used from the published version presented in Demographic yearbook of the year 2007 and 2011 and in periodical demographic reports of South Kazakhstan (Smailov, 2001 and Shaymanov, 2008).

Due to lack of published data for the descriptive analysis of fertility and for decomposition analysis, unpublished data of various characteristics of population from the Statistical Agency of the Republic of Kazakhstan (the period of 1999 to 2008 for Kazakhstan) and from the Department of Statistics in South Kazakhstan (the period 1999 to 2009 for South region) were used.

Data for the fertility analysis of Kazakhstan consist of live births and population of women by age for the years from 1999 to 2008. Those data are specified by urban-rural residency, by ethnicity and by birth order. Although number of live births by birth order is in the range from first to tenth birth, for the analysis data for the fifth and higher birth order were aggregated into one category.

Also data considering urban-rural residency have information about live births by ethnicity and birth order as well as information about population of women with respect to ethnicity and residency. With regard to ethnic difference there were data presented for seven ethnicities of Kazakhstan: Kazakhs (59.18 %), Russians (25.63 %), Ukrainians as well as Uzbeks equally present 2.86 %, while Uighurs take 1.51 %, Tatars (1.48 %) and Germans (1.44 %) (Demographic yearbook, 2007).

Regarding data of South Kazakhstan they include counts for the period from 1999 to 2010 by urban-rural differentiation of population and number of live births by birth order. Those data are classified by unit of age. Therefore, it is possible to analyze fertility intensity by each age assessing the age-specific fertility rates. However, data used for fertility analysis by ethnicity and marital status of women have disadvantages. Firstly, observed period covers years from 2002 to 2008. That allowed us to analyze reproductive changes by ethnicity and marital status of women only in the time of socio-economic growth (2000s). Secondly, number of women by ethnicity is available only in five years age groups and without specification of place of residence (urban and rural). Thirdly, the number of women by marital status is not available. Nevertheless, the number of live births is classified by birth order, urban-rural differentiation as well as ethnicity and according to marital status of mother (units of age). These circumstances influenced our ethnic fertility analysis that was performed in five year age groups and only for whole South Kazakhstan without distinguishing place of residence whether it is rural or urban area. Ethnic differentiation of population in South Kazakhstan differs in comparison with whole country: Kazakhs (69.95 %), Uzbeks (17.32 %), Russians (6.31 %), Azerbaijanis (1.26 %), Tatars (0.93 %), Koreans (0.42 %), Ukrainians (0.37 %), and Germans (0.16 %) (Data used from Demographic report (2007) of the Department of Statistics of South Kazakhstan). Furthermore, due to unavailable data fertility analysis by marital status of mother was calculated based on data of the total number of women (also differentiated by urban and rural places) at reproductive age 15-49.

It is not sufficient to examine reproductive behavior through vital statistics data. Therefore in the research data from survey of reproductive behavior of couples in South and North Kazakhstan conducted by Kazakhstani social scientist Z. Valitova were utilized. The detailed characteristics of data, parameters and design of the survey are presented further in this chapter in the sections related to the sample survey.

4.2 Quality of data

Population statistics of Kazakhstan are based on data of demographic events reported from local registry office (ZAGS- Zapis ob Actah Grazhdanskogo sostoyaniya) as well as census data conducted every ten years (the last corresponds to 2009 year) and data gained from the Department of Statistics in each region. Thereby reliability and quality of data depend on reports of the local registry office and have deficiency with incomplete registration, what was proved by comparison of

numbers for live births considered as unknown. Furthermore, there might be slight errors concerning misreporting of indefinite facts about mother, e.g. her ethnic or age. Such inaccuracies are not significant, although, they take place. Quality of data gained from the local registry office or the regional Department of Statistics could be verified with census data, though the problem related to unpublished data by each year and various population characteristics. Since collected data are not published or disseminate on the website of statistical office, the main issue is accessibility of data. This became evident from the preceding section when required data in denominator are absent. Moreover published data have either general information (sometimes just total numbers without specification of age, sex, ethnicity and etc.) or calculated demographic indicators which are not appropriate for comprehensive analysis. Additionally, published statistical data do not correspond necessarily to selected years.

With regard to unpublished data of the Statistical Agency of the Republic of Kazakhstan, the problem of unknown or indefinite live births or other indicators remain present, even if to small extent it introduces inaccuracy into data. Thereby data collection, its classification and accessibility need improvement on both national and regional levels.

4.3 Adopted approach and methods used

This study provides descriptive analysis of fertility on the basis of demographic method. However, the descriptive analysis shows the main changes in reproductive behavior, they have to be proved by using additional appropriate approaches. For this purpose a decomposition method by three factors was used. Additionally, reproductive behavior of couples living in South and North Kazakhstan (survey data) was examined through multinomial logistic regression method.

In this sub-chapter we provide description of all methods used. With regard to consecutive conception we start with demographic indicators and rates estimated for the explanation of demographic situation in Kazakhstan and its South region and continue with those used in the fertility analysis.

The Crude birth rate is characterized as a crude measure of childbearing where in the denominator is total population without specification of sex or age. The indicator is calculated from the number of babies live born in a given year divided by the mid-year population, and it is expressed as the number of live births per 1,000 people

$$CBR = \frac{B}{P} * 1{,}000$$

Where

B is the total number of live births in a given year

P is the mid-year of total population

It is necessary to note, that the crude birth rate is highly sensitive to the age structure. For instance, if prevalence of young population is high, than the crude birth rate is higher than in case

when old population dominates on total population. This indicator is not widely used due to its shortcomings. Relatively refined measure of childbearing is the **general fertility rate** which is calculated from the number of live births per 1,000 women aged 15-49 in a given year.

$$GFR = \frac{B}{P^F_{15-49}} * 1{,}000$$

Where

B is the total number of live births in a given year

P^F_{15-49} is the number of females (F) at reproductive ages (15-49) and presented by mid-year population

The fact, that the GFR is based on number of women at reproductive age, helps to avoid distortions (that appeared in the CBR) caused by differentiation of age and sex in studied population. Nevertheless, the proper analysis commonly use more detailed rate such as the **age-specific fertility rate** (ASFR or f_x). The age-specific fertility rate shows differences in fertility behavior at different ages. The measure can be also used for comparison in time. Furthermore, the age-specific fertility rate is used to calculate the total fertility rate (TFR).

$$f_x = \frac{B_x}{P^F_x} * 1{,}000$$

Where

B_x is the number of live births to women at aged x during a calendar year

P^F_x is the midyear number of females (F) at age x

The Total fertility rate (TFR) is the sum of the age-specific fertility rates from a cross-sectional perspective. It states the average number of children that would be born alive to a woman (or group of women) during her lifetime if she were to pass through her childbearing years conforming to the age-specific fertility rates of a given year. The TFR is one of the most useful indicators that show how many children women are currently having.

$$TFR = \sum \left(\frac{B_x}{P^F_x} \right)$$

Where

B_x is the number of live births to women at aged x during a calendar year

P^F_x is the midyear number of females (F) at age x

In addition, the analysis of fertility was done with regard to birth order of children born, for this purpose, the **birth order-specific fertility rate** (of the second kind) and its total sum rates were used. The birth order-specific fertility rate is defined as the number of live births of a given birth order per 1,000 women at childbearing age. It is calculated for specific age or age groups and is used to identify orders at different ages from the following formula:

$$f_x(k) = \frac{B_x(k)}{P^F_x} * 1{,}000$$

Where

B_x is the number of live births of a given order to women at aged x

P_x^F is the midyear number of females (F) at aged x

k corresponds to the birth order (1, 2, 3, 4 and over)

Similarly to the TFR, the sum of the birth order-specific fertility rates is expressed for each analyzing birth order.

$$TFR(k) = \sum \left(\frac{B_x(k)}{P_x^F} \right)$$

Where TFR (k) represents the average number of live births per woman according to birth order (k) which related to birth order (1,2,3,4 and over), while (k+1) correspondingly means following (or next) birth order.

In fertility analysis, the **mean age at childbearing** is the mean age of mothers at the birth of their children if women were subject throughout their lives to the age-specific fertility rates observed in a given year. The mean age at childbearing shows the average age of mother at birth and is calculated by formula:

$$\bar{x} = \sum [(x + 0.5) * f_x] / \sum f_x$$

Where x corresponds to age of mother and f_x relates to ASFR (age-specific fertility rate).

Mean age as well as fertility rates can be also distinguished by the birth order, than this formula has the same expression with only difference of the mentioned birth order. For instance, the formula of the mean age at first childbirth is defined as follows:

$$\bar{x}(1) = \sum [(x + 0.5) * f_x(1)] / \sum f_x\,(1)$$

Where x corresponds to age of mother and f_x relates to ASFR and (1) belongs to the first birth order.

In order to show fertility development of South Kazakhstan in comparison with selected regions fertility rates for given regions are also assessed. Furthermore, the **parity progression ratio** is also calculated. The parity progression ratio is the probability a_k of moving from parity k to parity $k+1$

$$a_0 = TFR\,(1)$$

and

$$a_k = \frac{TFR_{k+1}}{TFR_k}$$

Where k is related to the birth order (1, 2, 3, 4 and over), while k+1 correspondingly means following (or next) parity or birth order.

The last formula used in descriptive fertility analysis is the **proportion of childless women**:

$$p_0 = 1 - TFR\,(1)$$

Where TFR (1) is the total fertility rate of the first birth order and p_0 equals to the proportion of childless women.

In order to understand the effect of changes in reproductive behavior during observed period from 1999 to 2009, the decomposition methods of three factors were used: age, ethnic and

residence. But it is necessary to note, that in case of analysis for South Kazakhstan decomposition is performed by birth order not by ethnicity. As mentioned above, data about female population according to ethnicity are not available by place of residence. Therefore ethnic fertility development was not analyzed in urban and rural parts. Despite this the analysis covers effect of aforementioned factors, through calculation of the **general fertility rate (F or f)**.

The general fertility rate can be also expressed as:

$$F = \sum_{x} \sum_{j} \sum_{k} F_{xjk} * \frac{P_{xjk}}{P}$$

Where P_{xjk} corresponds to the number of women at reproductive ages and according to the factor used: the (x) is related to the age group of women, (j)represents ethnic group (or birth order for the analysis done in South Kazakhstan) and (k) belongs to differentiation by the place of residence.

F_{xjk} is the fertility rate with (xjk) categories

P is total population of women at reproductive ages (15-49)

In the same way the expression of the f is used for the second population with small letters:

$$f = \sum_{x} \sum_{j} \sum_{k} f_{xjk} * \frac{p_{xjk}}{p}$$

Regarding Das Gupta (1991) equation cell proportion is expressed in:

$$\frac{P_{xjk}}{P_{...}} = A_{xjk} * B_{xjk} * C_{xjk}$$

Where is:

$$A_{xjk} = \left(\frac{P_{xjk}}{P_{jk}}\right)^{\frac{1}{3}} * \left(\frac{P_{xj}}{P_j} * \frac{P_{xk}}{P_k}\right)^{\frac{1}{6}} * \left(\frac{P_x}{P}\right)^{\frac{1}{3}}$$

$$B_{xjk} = \left(\frac{P_{xjk}}{P_{xk}}\right)^{\frac{1}{3}} * \left(\frac{P_{xj}}{P_x} * \frac{P_{jk}}{P_k}\right)^{\frac{1}{6}} * \left(\frac{P_j}{P}\right)^{\frac{1}{3}}$$

$$C_{xjk} = \left(\frac{P_{xjk}}{P_{xj}}\right)^{\frac{1}{3}} * \left(\frac{P_{xk}}{P_x} * \frac{P_{jk}}{P_j}\right)^{\frac{1}{6}} * \left(\frac{P_k}{P}\right)^{\frac{1}{3}}$$

Meanwhile A_{xjk} represents only the effect of (X) that is related to the difference in age groups, B_{xjk} implies the effect of (J) that covers ethnic differentiation for Kazakhstani analysis (and

difference in birth order for South Kazakhstan) and C_{xjk} shows the effect of (K) that belong to urban-rural difference.

The main formula for the differences between regions is expressed as follows:

$$f - F = [R(f) - R(F)] + [X(a) - X(A)] + [J(b) - J(B)] + [K(c) - K(C)]$$

Where:

R (f) and R (F) express the effect of difference due to the age-specific fertility rate correspondingly to R (F) as the first population/region and R (f) for the second population/region.

X (a) and X (A) express the effect of difference due to age

J (b) and J (B) express the effect of difference due to ethnicity (birth order)

K (c) and K (C) express the effect of difference due to residences (urban/rural)

Differences in each mentioned factor or rate were derived from following formulas:

Where

R (F) = (X, J, K) is the standardized rate in population/region 1:

$$R(F) = \sum_{x} \sum_{j} \sum_{k} \frac{\frac{p_{xjk}}{p} + \frac{P_{xjk}}{P}}{2} * F_{xjk}$$

In case of the second population the rate R (F) was standardized in the same way with only difference instead of R (F) and F_{xjk} it was used rate of second population with small letter R (f) and f_{xjk}

With regards to age-difference the rate was standardized as follows:

X (A) = (J, K, R) is the standardized rate in population 1

$$X(A) = \sum_{x} \sum_{j} \sum_{k} \frac{f_{xjk} + F_{xjk}}{2} * \left[\frac{b_{xjk}c_{xjk} + B_{xjk}C_{xjk}}{3} + \frac{b_{xjk}C_{xjk} + B_{xjk}c_{xjk}}{6}\right] * A_{xjk}$$

Standardizing (X) factor for the second population/region the same formula was used, but instead of X (A) and A_{xjk} abbreviation X (a) and a_{xjk} are used.

Each factor used was standardized with the same procedure. The J (B) is expressed in the following equation:

J (B) = (X, K, R) presents the standardized rate in population 1

$$J(B) = \sum_{x} \sum_{j} \sum_{k} \frac{f_{xjk} + F_{xjk}}{2} * \left[\frac{a_{xjk}c_{xjk} + A_{xjk}C_{xjk}}{3} + \frac{a_{xjk}C_{xjk} + A_{xjk}c_{xjk}}{6}\right] * B_{xjk}$$

The same formula was used in order to standardize J (b) for the second population/region and correspondingly instead of J (B) and B_{xjk} used J (b) and b_{xjk}

The factor K (residence difference: rural, urban) was standardized in the same way as factors X, J. So, then it follows:

K (C) = (X, J, R) equals to the standardized rate in population 1

$$K(C) = \sum_x \sum_j \sum_k \frac{f_{xjk} + F_{xjk}}{2} * \left[\frac{a_{xjk}b_{xjk} + A_{xjk}B_{xjk}}{3} + \frac{a_{xjk}B_{xjk} + A_{xjk}b_{xjk}}{6}\right] * C_{xjk}$$

The same way K(C) factor was expressed for the second population/region by K(c) and instead of C_{xjk} used c_{xjk}. Those standardized factors and rates are subtracted within two observed population and summarized then according to the main formula expressed above.

The next method used is multinomial logistic regression. With this method we analyzed the effect of independent variables such as place of residence, educational attainment, and financial income of family, religious affiliation, sex difference, ethnicity and age of respondents in comparison with their reproductive views and behaviors. This assessment was done with the help of SAS 9.3 (The Logistic Procedure; nominal response model) through formula:

$$\log(\pi_{hij}/\pi_{hir}) = \alpha_j + x'_{hi} * \beta_j$$

The π_{hij} is the probability that a respondent living in the urban area (h) and with one of the level of education analyzed (i), prefers particular number of children equals j, $j \neq r$ and r is the baseline style that corresponds to reference category. In the same way this formula was used for each dependent variable (number of children) and independent variables mentioned above. However, the meaning of (h), (i), (j) letters changes due to exchanged variables in calculation. In addition, (r) reference categories are also changed. Reference categories are specified by: in case of "ideal number of children" the reference category is two children because it is the most frequent answer. Furthermore, with respect to regional aspect couples from South Kazakhstan do not mention ideal number of children below two. Their reproductive ideals start at the level of two and more children.

Variable "desired number of children" has a reference category two children. Again, two children are the most frequent answer in survey data. With regard to planned number of children the reference category is not changed (two children).

Considering "real number of children" the reference category differs. It corresponds to no child (0-zero), even though this response is not the most frequent. Nevertheless, it has considerable amount of answers (140 among 732 respondents). Thereby we decided to analyze interaction between respondents who have a child or children versus those who do not.

The interactions between independent variables were analyzed also on the base of chosen reference categories. In the core, they remain the same for comparative purposes (for variable ideal, desired, planned and real number of children). The additional reference categories were set up as follows: in regional aspect – "North region" has been chosen as a reference category, while in place of residence – "Urban area" is the reference category, with regard to the educational attainment – "Secondary school" is used as a reference category, in financial income of respondents the monthly wage – "10,000-30,000 national currency (KZT or tenge)" is the reference category. According to religious affiliation the "Christian couples" have been chosen for the reference category. With regard to ethnicity the "Russians" present a reference category. According to age group, the

"respondents aged 38-54" have been chosen for the reference category, because they represent significant part of sample survey.

Apropos of age differentiation, let us make a remark that for multinomial regression analysis we used four age groups (18-22, 23-27, 28-37, 38-54 ages). These age groups are based on the N. Golovin's approach of distinguishing generations by historical events and their value orientations (Golovin, 2004). The eldest group (aged 38-54) consists of people whose value orientations were formed in Soviet time before the process of perestroika. Respondents aged 28-37 were born in 1970s and their value orientations were formed during the perestroika period. This generation is considered as vulnerable because they were between two systems: Soviet and post-Soviet. Two youngest groups represent generation who were born in 1980s and entered to their reproductive age after perestroika. However, due to historic point and forming values of respondents born in1980s are divided into two groups (aged 18-22 and 23-27). The representatives of the youngest age-group were born after the year 1985, at the time of manifest of glasnost, democracy and liberty. Therefore their childhood was not influenced by so-called "Soviet system value" which was related to pioneers organization in the secondary school. In comparison with that, those who were born in the earliest of 1980s experienced the period of "Soviet system value" in the primary (1-4 classes) period of the secondary school. Therefore, it is reasonable to assume that they have been influenced by the values of old system.

For the descriptive analysis of reproductive thoughts and behavior respondents are classified into five years age-groups starting with the youngest age of 18. This approach shows difference according to the age in smaller groups.

Coming back to explanation of details used in multinomial logistic regression there is needed to note that the analysis is based on two models:

Model 1 carried out for two regions (South and North) separately, with those reference categories presented above. The purpose of this model is to analyze effects of reproductive attitudes and behavior of couples within one region.

Model 2 is implemented for both (South and North) regions together pooled datasets in order to understand at regional discrepancy. Additionally, the purpose is to show differences between South and North and differences within one model only, for selected variables. For both models reference categories remain the same.

4.4 Methodological framework of the sample survey

However, vital statistics provide relevant data with respect to questions addressed to reproductive behavior. They cannot answer all issues of our interests. Therefore, data of a field research have to be also analyzed. Data utilized in this research come from work of Kazakhstani social scientist Z. Valitova as it was mentioned above. The novelty of the survey is in its focuses on reproductive behavior among couples, not just females as it is commonly done (Valitova, 2010).

Thereby, the role of females and males concerning their reproductive ideals, preferences and intentions as well as its realization can be study. Although this survey has been analyzed by Z. Valitova, her work dealt with descriptive approach in family and social network context, our study examines the line from reproductive ideals to real number of children considering aforementioned variables and using multidimensional approach. We apply descriptive method (with expression of statistical significance of Chi-Square test) as well as logistic regression method.

4.4.1 Survey parameters

The survey was conducted in North and South Kazakhstan. This selection seems reasonable due to antithetic reproductive behavior in those regions. While the one region is characterized by the highest TFR (South Kazakhstan: 3.64 (live births per woman)) among Kazakhstani regions, the second by the lowest TFR (North Kazakhstan: 1.61(live births per woman)) in the year 2007 what corresponds to survey realization.

Couples from urban and rural areas of North and South Kazakhstan could participate in this survey if wife's age fell into range age from 18 to 49, i.e. reproductive period. Questionnaires had been designed on the basis of questions verified in surveys carried out earlier. Questionnaire sampling was done in respect to regional, urban-rural differentiation and ethnicity (Kazakhs and Russians) quotas. Those ethnics have been selected with respect to knowledge about ethnic structure of chosen regions. While the South Kazakhstan region is highly populated by Kazakhs (69.95 %) and Russians represent (6.31 %), the North Kazakhstan region is highly populated by Russians (48.5 %) and Kazakhs take (32.3 %) (Sultanov, 2006). Moreover those two ethnicities are most common in Kazakhstan. The total number of respondents in survey equaled to 800 individuals (both regions and its urban-rural areas) or 400 couples. However, due to errors and deviations present in data, the number of respondents was narrowed for the analysis to the 732 individuals. While 384 respondents come from South Kazakhstan, 348 come from the North region. That corresponds to 192 couples and 174 couples respectively.

Data were analyzed with the help of SAS program (SAS 9.3). Reproductive attitudes and behavior are considered as dependent variables and place of residence, educational attainment, and financial income of family, religious affiliation, sex difference, ethnicity and age of respondents as independent variable.

4.4.2 Respondents and their selection

The respondents of the survey consist of 366 couples from South and North Kazakhstan. All respondents were divided into four generation groups according to N. Golovin's approach which was mentioned in the sub-chapter 4.3 (Adopted approach and method used). The shares of given generations are as follows: respondents at the age of 18-22 years consist 10.7 % of the sample, the second group at the age 23-27 years has 17.8 % share, the third group at the age of 28-37 years takes 27.4 % and the share of the eldest group at the age of 38-54 corresponds to 43.8 %. With

regard to main parameters like urban-rural differentiation and ethnicity respondents were equally divided by their place of residence and declared ethnicity either Kazakh or Russian.

According to the level of attained education respondents were divided into the following groups: completed secondary school (23.0 %); completed professional school or college (38.5 %); respondents graduated from a university or an institute (37.7 %) and those posed different answers or do not have any education level (0.6 %). Considering religion distribution of respondents, the distribution is as follows: Muslim families have 49.5 % share, Christian families take 48.3 % and those with different religion or no religion consist only 2.2 % of the sample. With regard to financial income or wage per month respondents are distributed according to following categories: those who earn a low wage (10,000-30,000 KZT) represent 41.8 % of the sample, the second group characterized by middle class income (30,001-50,000 KZT) covers 26.3 % and the third group with high income (50,001 and above) has share of 14.4 %. It is necessary to note, that for 4.6 % of respondents the question was hard to answer and 12.7 % of respondents did not have their own income.

Without doubts, distribution of the sample is valuable information for further analysis.

Chapter 5

The position of Kazakhstan among neighboring countries

Among its neighbors Kazakhstan stands as a multinational and culturally mixed country. During its entire history Kazakhstan used to receive population from Russia and Ukraine in the 1950s and in the 1990-2000s from Central Asian countries. Thereby, demographic picture of Kazakhstan has been changing significantly during the second half of the twentieth century and in the first decade of the twenty first century.

5.1 Kazakhstan and other former Soviet Republics

Kazakhstan as a transcontinental country between Central Asia and Europe takes a special position with regards to its diverse culture. Bordering with three culturally different types of countries: from the South with Uzbekistan, Kyrgyzstan and Turkmenistan, North with Russia and East with China. Kazakhstan is represented with mixed cultures. Historically, Kazakhstan has had many things in common with Russia, Uzbekistan, Kyrgyzstan, and Turkmenistan as all of them were part of the USSR. During the twentieth century the countries which were part of the USSR endured similar events such as: collectivization at the end of 1920s, famine in the 1930s, industrialization, WWII, the process of rising industry, and farm production. In the beginning of 1990s post-Soviet countries underwent the collapse of the USSR. These historical events identified changes in all spheres of society, infrastructure, economics and population due to differences occurred in demographic processes. It required each country of post-Soviet union to elaborate their own way in building government system, legislation, socio-economic and demographic policies as well.

Observing demographic situation of post-Soviet countries during the Soviet time and after gaining independence in 1991, gives us an opportunity to analyze changes in demographic processes which determined population size. During prosperity time of the USSR, population had rose as a result of increased fertility, especially in eastern countries like Uzbekistan, Kyrgyzstan, Turkmenistan, Tajikistan and Kazakhstan. Moreover, due to the iron curtain of Soviet regime there was no intensive emigration from those countries. These processes determined positive changes of post-Soviet population as presented in Table 1.

Tab.1 Population of the former Soviet Republics in 1961-2001 (thousands)

	1961	1971	1981	Population change 1981-1961	1991	1996	2001	Population change 2001-1991
First Group								
Uzbekistan	8,722	12,147	16,158	7,436	20,707	23,007	24,900	4,193
Turkmenistan	1,623	2,218	2,897	1,274	3,714	4,587	4,843	1,129
Azerbaijan	3,973	5,227	6,202	2,229	7,137	7,726	8,081	944
Tajikistan	2,120	2,983	4,007	1,887	5,358	5,884	6,196	838
Kyrgyzstan	2,214	2,995	3,653	1,439	4,422	4,625	4,908	486
Armenia	1,905	2,548	3,119	1,214	3,376	3,766	3,804	428
Second Group								
Russia	120,766	130,704	139,165	18,399	148,543	147,967	144,800	-3,743
Ukraine	43,097	47,507	50,135	7,038	51,944	51,334	49,000	-2,944
Kazakhstan	10,236	13,211	15,053	4,817	16,793	15,676	14,844	-1,949
Georgia	4,190	4,686	5,071	881	5,464	5,416	5,100	-364
Belarus	8,233	9,077	9,675	1,442	10,260	10,264	9,990	-270
Moldova	3,039	3,621	4,032	993	4,366	4,332	4,272	-94
Total	210,118	236,924	259,167	49,049	282,084	284,584	280,738	-1,346

First group: population increase between 1991-2001; Second group: population decrease between 1991-2001
Source: State Statistics Committee of the USSR, demoscope /weekly № 43-44

The negative population growth had appeared in some of the post-Soviet republics after gaining independence in 1991. Such differentiation took place among the former Soviet Republics due to its different demographic potential before the collapse of the USSR. The countries of the first group (tab.1) correspond to traditional conservative societies where the level of fertility was kept high, however, the fertility rate started to decline during the 1990s as it was an unstable time as a result of the socio-economic crisis. Nevertheless, the first group of countries did not reach negative population growth as fast as it appeared among the second group (tab.1).

The considerable reduction in population size occurred among Slavic countries like Russia and Ukraine. Such demographic trend was forecasted in 1993 by the Statistical Committee of the Commonwealth of Independent States that the population decline in those countries would not be solved even by a positive migration balance, as it happened afterwards. Natural population change of Slavic countries rapidly went down as mortality rose and fertility level, which was not substantially higher, decreased below the replacement level.

Despite the fact that Georgia, Kazakhstan, as other Caucasian and Central Asian countries are considered traditional and conservative, they experienced a population decline. Such decrease in population size occurred in the 1990s as a result of increased mortality rate, decline in fertility level and intensive emigration from those countries. Unlike population in Central Asia and Caucasus, in Kazakhstan and Georgia it has already showed relatively low fertility levels during the Soviet time

in the 1970's (fig. 3). In Georgia during 1992-1993 a population decrease was reinforced as a consequence of Georgian-Abkhazian war.

Regarding Kazakhstan, the most influencing processes were rapid decrease in fertility, increased mortality rate and a mass emigration of Slavic and German population due to new reforms introduced in the country, such as language reform, when Kazakh language became official in 1989. However, the Russian language changed its status to the language of international communication. It also determined the changes in the government, business and market since the power of the titular ethnic group (Kazakhs) grew. Mass emigration of Slavic and German population changed the demographic picture of Kazakhstan substantially during 1989-1999. According to data gained from Kazakhstan statistical office in 1989 the population consisted of: Kazakhs 39.6 %; Russians 37.2 %; Germans 5.8 %; and Ukrainians 5.4 %. These ethnic groups presented a different distribution in 1999: Kazakhs 53.3 %; Russians 30.02 %; Ukrainians 3.6 % and Germans 2.3 %. This reduction of Slavic and German population caused a relative increase of the Kazakh population between 1989 and 1999. However, this is only due to a population decrease of other ethnic groups in the republic.

The real growth of the Kazakh population had become evident only in the middle of the 2000s when the recuperation fertility appeared. Meanwhile the program of "Oralmans" was organized in order to return Kazakh Diasporas from different countries.

As discussed above, all post-Soviet republics were required to elaborate their own demographic policy in order to predict and possibly solve negative consequences which occurred after the collapse of the USSR. Obviously, if natural growth shaped the population size, the age structure of the population was also affected. According to the data from the population census of the USSR (1989) and the Statistical Committee of Commonwealth of Independent States the process of population ageing became an unavoidable fact not only for Slavic countries, where it was expected, but for some Central Asian and Caucasian countries.

As presented in Table 2 the population aged 65 and over has increased in most of the former Soviet Republics. By now the only three countries (Tajikistan, Turkmenistan and Uzbekistan) in Central Asia are safe due to their higher fertility levels which also determine a high percentage of population at the age of 0-14.

Tab.2 Population of the former Soviet Republics by age groups in 1989, 2001, 2006 (in %)

	0-14			15-64			65 and over		
	1989	**2001**	**2006**	**1989**	**2001**	**2006**	**1989**	**2001**	**2006**
Azerbaijan	33.0	30.0	25.0	62.0	64.0	68.0	5.0	6.0	7.0
Armenia	30.0	-	22.0[1)]	64.0	-	68.0[1)]	6.0	-	10.0[1)]
Belarus	23.0	18.0	15.0	67.0	68.0	70.0	10.0	14.0	15.0
Georgia	25.0	19.0	18.0[1)]	66.0	66.0	68.0[1)]	9.0	15.0	14.0[1)]
Kazakhstan	32.0	27.0	24.0	62.0	66.0	68.0	6.0	7.0	8.0
Kyrgyzstan	38.0	34.0	31.0[1)]	57.0	60.0	63.0[1)]	5.0	6.0	6.0[1)]
Moldova	28.0	23.0	19.0[1)]	64.0	68.0	71.0[1)]	8.0	9.0	10.0[1)]
Russia	23.0	18.0	15.0[1)]	67.0	70.0	71.0[1)]	10.0	12.0	14.0[1)]
Tajikistan	43.0	42.0	37.0	53.0	54.0	59.0	4.0	4.0	4.0
Turkmenistan	40.0	37.0	-	56.0	59.0	-	4.0	4.0	-
Uzbekistan	41.0	37.0	36.0[2)]	55.0	59.0	60.0[2)]	4.0	4.0	4.0[2)]
Ukraine	22.0	17.0	15.0	66.0	69.0	69.0	12.0	14.0	16.0
Sum	26.0	22.0	21.0	65.0	67.0	68.0	9.0	11.0	11.0

Source: Statistical Committee of CIS and population census of USSR in 1989; 1) – 2005; 2) - 2002

An unfavorable situation in the process of population ageing takes place among Slavic and two Caucasian (Georgia and Armenia) countries. These countries are characterized by the below replacement fertility level and higher mortality rate. However, mortality rate at older age slightly decreased and life expectancy at birth increased during the 2000s what has also contributed to population ageing. Moreover, in all post-Soviet countries the life expectancy at birth differs considerably between males and females. For instance, in Russia the difference of the life expectancy at birth between males and females corresponds to almost 12 years (males are 63.03 and females are 74.87) (Sherbakova, 2011) and in Kazakhstan to almost 10 years (males are 63.51 and females are 73.32) (Demographic yearbook, 2011).

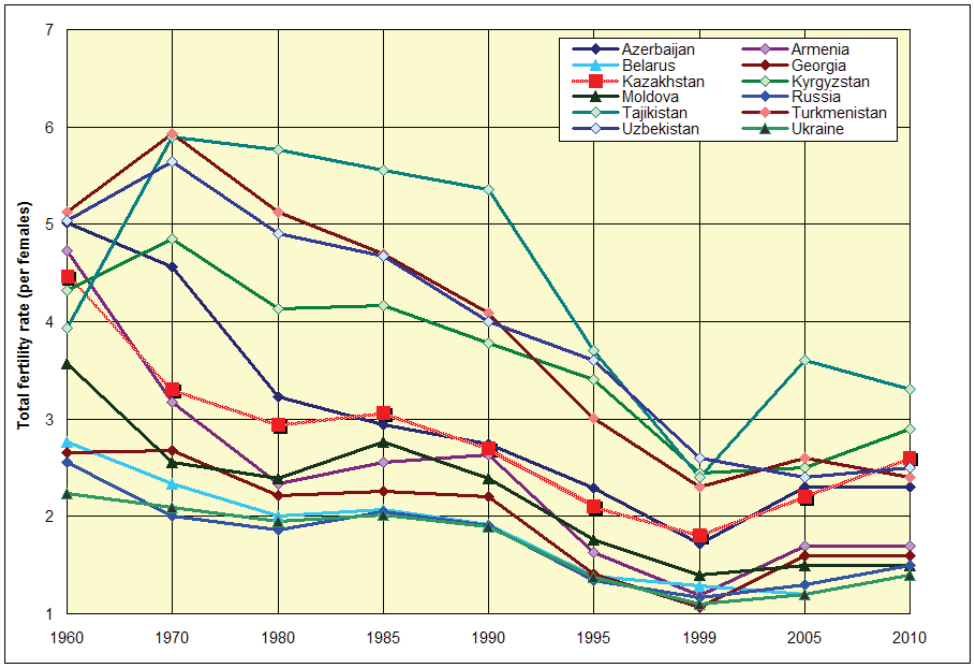
Taking into account that female part of the population not only lives longer than male one but, in addition, represents the majority number of elderly people, in Russia among the age group of 60-64 per 100 females there were 72 males (Topilin, 2002). Both differences including life expectancy at birth and number of old people among men and women require the attention. Vulnerable older population and modification in pension system in all post-Soviet countries should be a priority for the governments as relatively similar situation happened in each republic, except for three Central Asian countries mentioned above. Moreover, trends of population ageing are going to expand soon by the generation born during the 1950s, so-called “baby boom”, as part of them reached retirement age and other will be at their retirement age in a couple of years.

With regards to Kazakhstan, it is evident that the population ageing is taking place (tab.2), even though this process is not yet prevailing, as it has already happened in Slavic and Caucasian countries. However, in comparison with Central Asian countries, population of Kazakhstan is the most advanced in the process of ageing since it being a multinational state with significant size of

Slavic population is already showing low fertility. The rest of the countries in Central Asia represent mono-national states as the majority of their population belongs to the titular ethnic group, who used to lead a conservative way of life. Therefore these countries were able to avoid the process of ageing since the foundation of their age pyramid has not narrowed down yet.

As discussed above, one of the most important parameters of population change is fertility rate which also considerably differs between the former Soviet Republics. Fertility decrease in every single country of the former Soviet Union has been experienced during the 1990s. However, again for Slavic countries such decline in fertility has more negative impact than for Central Asian countries. (fig.3)

Fig.3: Total fertility rates in the former Soviet Republics during 1960-2010



Note: data from 2000 year are taken from United Nation Population Division

Source: http://www.demoscope.ru/weekly/ssp/sng_tfr.php

http://demoscope.ru/weekly/2005/0205/analit01.php

http://demoscope.ru/weekly/2010/0405/barom05.php

The trend of TFR from 1960 to 1970 shows that fertility rate increased in four Central Asian countries except for Kazakhstan: Tajikistan, Turkmenistan, Uzbekistan and Kyrgyzstan. These four countries (Tajikistan, Turkmenistan, Uzbekistan and Kyrgyzstan) are considered as traditional societies with high reproduction levels among the population. These levels have been kept it position also due to the fact that in Tajikistan, Turkmenistan, Uzbekistan and Kyrgyzstan the titular ethnic group prevailed and Slavic population represented only: in Kyrgyzstan 27 % and in the other countries (Tajikistan, Turkmenistan and Uzbekistan) even less than 10 %. (Vishnevsky, 2005).

However, in Kazakhstan, Slavic ethnic groups represented half of the population (Vishnevsky, 2005) who used to have and still have low fertility levels.

Moreover, from 1960 to 1970 total fertility rate in Kazakhstan considerably fell down from 4.46 live births per woman to 3.31 live births per woman. Same decline took place in other industrial countries of the USSR as well since that time corresponded to economic reforms from the mid of 1960s to the end of 1970, so-called Kosygin reform. The reform characterized by new economic management, increased economic independence of enterprises, associations and organizations. These reforms as well as the process of urbanization and modernization had an impact on women's status; their participation was required in labor market. Consequently, combining work and house duties was quite tough.

The situation with fertility level slightly improved when the Soviet Union got its apogee during the 1980s though it was for a short period. The "baby boom" took place in most of the post-Soviet countries during 1985 to 1987 with a double effect as the generation born after WWII gave birth to their second, third or even fourth child. Meanwhile, the generation born in the 1960s started its reproductive life and implemented childbearing process with their first child. This sharp increase in reproduction was full of hopes but not continuous as the fertility trend already started to diminish. Furthermore, the collapse of the Soviet Union has negatively influenced all processes and it is evident that the fertility trend has been showing decline in each country after 1990.

The next significant factor which determines changes in the population development is mortality. The dynamics of mortality had a negative impact in each country of Soviet Union during the twentieth century since it corresponds to the time of tragic historical events such as: two revolutions in 1905 and in 1917, WWI from 1914 to 1918, famine in the beginning of the 1930s, ethnic deportation and repression during Stalin's regime, WWII. Those processes brought mortality levels to considerably high points.

According to official data of the USSR, in 1913 the crude death rate was 29.1 ‰, and in 1926 it was 20.3 ‰, by 1935 it reduced to 16.0 ‰. However, it took years for scientists to recalculate the above mentioned official data, which hid the true information as they revealed that in 1930 the crude death rate was actually 27.0 ‰ and in 1935 it stood at the point of 21.0 ‰. (Vishnevsky, 2003).

After tragic historical events, such as WWII, the mortality level started to decrease in the USSR, so during 1950 to 1970 the crude death rate varied from 10.0 ‰ to 7.1 ‰ (Bedny, 1972). These changes in the mortality levels occurred in each post-Soviet country since the 1970s and characterized that period as the time of relative development in terms of people's living conditions. By this fact life expectancy at birth increased in the second half of the twentieth century as it seeing in Table 3.

Tab.3 Life expectancy at birth in the former Soviet Republics in 1955, 1965, 1975, 1985, 1995, 2005

	1955	1965	1975	1985	1995	2005
Azerbaijan	59.99	64.05	65.10	66.06	66.03	70.12
Armenia	64.92	69.21	70.59	68.41	69.93	73.69
Belarus	67.90	70.40	71.06	71.33	68.15	69.44
Georgia	62.60	66.64	69.63	70.45	71.07	73.05
Kazakhstan	57.19	61.51	64.19	67.41	62.96	65.78
Kyrgyzstan	55.09	59.50	62.32	66.01	65.92	66.70
Moldova	60.50	64.20	64.80	67.30	66.59	68.23
Russia	66.85	69.29	67.98	69.11	65.70	67.68
Tajikistan	55.20	59.30	61.89	63.61	62.88	66.44
Turkmenistan	53.43	57.38	60.18	62.79	63.57	64.65
Uzbekistan	57.89	62.06	64.68	67.32	66.79	67.44
Ukraine	69.26	71.29	69.38	70.57	67.36	67.54

Source: United Nation Population Division

The trend of life expectancy at birth shows that Slavic countries as well as Central Asian posed a risk, as those countries had and still having high mortality levels. Kazakhstan has high mortality levels compared to other Central Asian countries however the country has not reached negative natural increase as Slavic countries (Sherbakova, 2011). Although, increase in mortality rate and decrease in fertility after the collapse of the Soviet Union in Kazakhstan did not determine a very high natural increase (4.8) compared to other Central Asian countries: Kyrgyzstan 12.8, Turkmenistan 13.1, Uzbekistan 15.1 and Tajikistan 22.3 by 2000. (Shokamanov, 2006). Today, the crude death rate in Kazakhstan has fallen down to 8.9 per 1,000 population by 2010 when it was 10.4 per 1,000 population in 2005. (Demographic yearbook, 2010)

The next demographic event observed in this chapter is migration in the former Soviet Republics. During the Soviet period the intensity of internal migration had a spatial or geographical movement of the population mostly caused by governmental purposes since in mid 1950s it was required to build up a new infrastructure in Central Asian countries. That caused the flow of the population from Russia and Ukraine to Kazakhstan.

However, the external migration did not demonstrate high intensity due to communist regime which did not allow free movement out of the USSR. Thereby, high intensity of external migration appeared at the end of the 1980s and continued during the 1990s when people were returning to their original historical territories. On this occasion, Kazakhstan lost a substantial part of population which went back to Russia, Ukraine and Germany.

As seen from Table 4, Kazakhstan showed negative net migration on the eve of the collapse of the USSR and after the first decade of its independence.

Tab.4: The migration between the former Soviet Republic in 1989 and 2000 (population in thousands).

	1989			2000		
	Immigration	Emigration	Net migration	Immigration	Emigration	Net migration
Azerbaijan	120,7	123,5	-22,8	4,23	16,4	-12,2
Armenia	3,4	105,4	-67,0	1,6	17,5	-15,9
Belarus	101,3	78,8	22,5	23,5	12,8	10,7
Georgia	22,7	47,8	-25,1	2,3	21,5	-19,2
Kazakhstan	176,0	216,2	-40,2	31,6	133,4	-101,8
Kyrgyzstan	43,4	43,5	-0,1	5,3	18,1	-12,8
Moldova	53,3	63,2	-9,9	4,0	16,6	-12,6
Russia	824,8	695,3	129,4	346,8	82,6	264,2
Tajikistan	23,4	34,6	-11,2	2,0	13,1	-11,1
Turkmenistan	24,6	28,8	-4,2	1,15	9,9	-8,7
Uzbekistan	79,8	167,6	-87,8	5,0	52,4	-47,4
Ukraine	469,8	373,8	96,0	49,3	82,0	-32,7
Sum		1978,3	+ -248		476,7	+-275

Source: The population of Russia in 2001. M., 2002, p. 168

The negative net migration took place in Kazakhstan until 2003 when it rounded to -8,3 (population in thousands), and only in 2004 it showed improvement and reached 2,7 (population in thousands) (Zhumasultanov, 2005). As it seeing in Table 4 the negative net migration took place in Kazakhstan even before gaining independence of the country in 1989. The end of 1970s characterized as the period of the first noticeable flow of the population from Kazakhstan (Sdykov, 2005). Positive trends of migration in Kazakhstan manifested due to the fact that by mid 2000s most of Slavic and German population has already left Kazakhstan and there was a numerous inflow of Kazakh Diasporas "Oralmans" from Uzbekistan, China and Mongolia. The program of "Oralmans" was the solution undertaken by the government in order to avoid population decrease, since the 1990s were the years of rapid population decline; thus, Kazakhstan belonged to the second group of countries (tab.1).

Analysis of the demographic situation in Kazakhstan allows us to conclude that the country is moving through demographic transition process more intensively compared to other Central Asian countries. As it was noted, the increase in mortality and the decrease in fertility rates in Kazakhstan came about faster than in Tajikistan, Turkmenistan, Uzbekistan and Kyrgyzstan. The demographic situation of Kazakhstan is alarming as the country is not far from the population decrease that is currently observed in Slavic countries of the former Soviet Union.

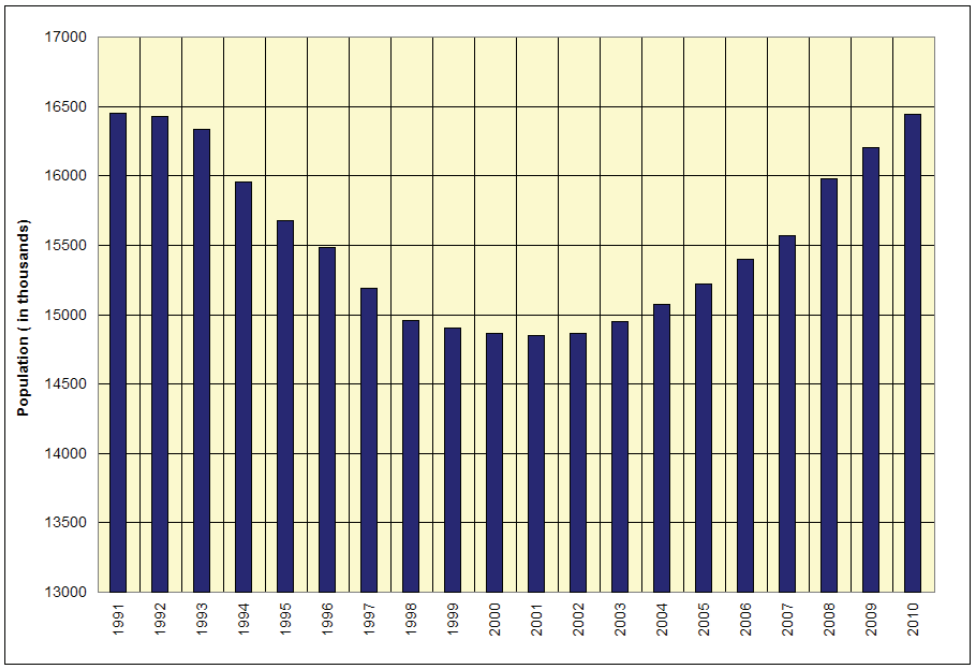
5.2 Population development in Kazakhstan

The population development of Kazakhstan has gone through considerable stages during the twentieth century in comparison with its neighboring countries as it had already been discussed in preceding sub-chapter. According to the aforementioned facts, population of Kazakhstan has been increasing during the Soviet period and after gaining the independence, Kazakhstan experienced population decrease. There are two points of view among Kazakhstani demographers regarding the decrease of population after the collapse of the USSR: some consider that the population decline was caused by the collapse of the Soviet Union while the others are inclined to say that the process of decline would have started even without the collapse of the USSR, however, this historical process had its influence on changes in population size (Sdykov, 2005).

While considering the situation with the population decline, it should be noted that changes in the population growth are determined by natural increase and net migration. According to the statistical data, fertility decrease occurred at the end of the 1960s and 1980s, since the total fertility rate in 1960 was 4.33 live births per woman and in 1969 it dropped to 3.26 children. Slight decrease of the total fertility rate also occurred in the last years of the 1980s as in 1988 it was 3.13 live births per woman and reduced to 2.84 in 1989. With regards to mortality levels, there appeared a slight increase in the range of twenty years from 1970s to 1990s, what determined decrease of life expectancy at birth (1970 is 70.1 to 1990 is 68.1) (Zhumasultanov, 2005). In the mid of 1990s life expectancy fell down considerably and expressed 62.96 (tab.3).

As for the migration process, Kazakhstan started to lose its population in the 1970s when the emigration of Slavic population has begun. Since Slavic population had migrated to Kazakhstan by the government requirements in the mid 1950s, some of them considered that as a temporary occasion and planned to go back to their places of origin (Sdykov, 2005). The first wave of emigration took place during 1970-1979 which determined the negative net migration of -5,0 (population in thousands). The second wave occurred during the period of 1980-1989 with the migration balance of -7,0 (population in thousands). The changes in the natural increase and net migration identified that the population decline was inevitable, although the collapse of the Soviet Union influenced it harshly.

Fig. 4: Total population in Kazakhstan, 1991-2010



Source: Agency of Statistics of Kazakhstan

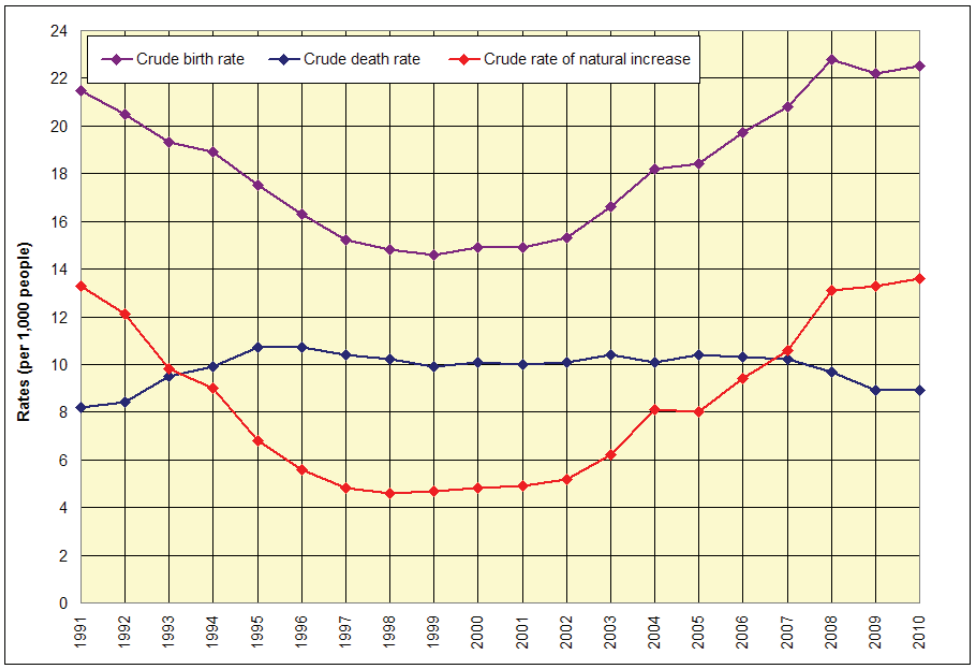
The trend of population changes in Kazakhstan shows that the sharpest decrease in population size occurred between 1993 and 1994 when it fell by less than 16.0 million inhabitants. This was a depressive period in the demographic and socio-economic system of the state. With regards to demographic point, such a decrease in the mentioned years was caused by the peak of emigration flow of Slavic and German population. The period of 1993-1994 was a tough time for socio-economic system of Kazakhstan due to the introduction of a new economic system and change of the national currency from ruble to tenge (KZT). It is obvious that any innovation needs time for adaptation and a short term crisis is inevitable in the beginnings which took place in Kazakhstan during the mentioned period backed by unemployment, price hikes and as a result lower living standards (Alekseenko, 2001).

Local scientists (Sdykov, 2005) identified demographic situation of Kazakhstan by specifying three stages of developments: 1991-1993 as the inertial period when the dynamics of natural increase and net migration maintained their previous trends though fertility started to decrease and mortality to increase. The second stage which took place during 1993-2001 was characterized as a depressive one, since mortality sharply increased, fertility declined and during 1993-1995 the emigration reached it apogee that had an impact on a considerable decline of population. The third stage of demographic development started in 2002 when the first positive changes occurred and population size started to increase (fig. 4).

The increase of population from 2002 was mostly based on natural increase as the recuperation of fertility occurred in 2003 when the total fertility rate rose from 1.88 live births per woman (2002)

to 2.03 live births per woman (2003) and has continued to grow further (5.3 Fertility developments). Another influential factor was migration of Kazakh Diasporas "Oralmans" that has been already mentioned above. As for mortality level, it was not positive as the first reductions in death rates appeared from 2008 and onwards (fig. 5).

Fig. 5: Trends in crude rates of birth, death and natural increase in Kazakhstan, 1991-2010



Source: Agency of Statistics of Kazakhstan

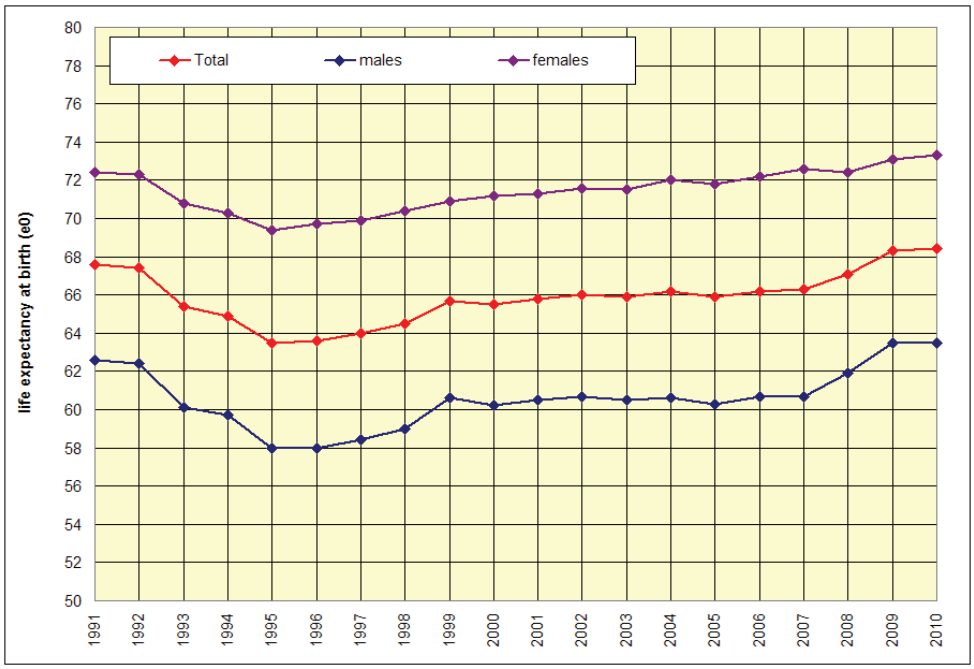
The trends of mortality and fertility determined changes in the crude rate of natural increase which started to drop sharply in 1993 and showed the increase only by 2005. Despite the fact that fertility levels were already on the rise in the beginning of the 2000s, the mortality still kept its high level rounding at 10.4 (per thousand) reflected also by life expectancy at birth (fig. 6) which was caused by low living standards, low quality and high costs of healthcare system and poor environmental conditions in some regions. All the above mentioned problems determined high mortality levels, and besides had an alarming impact on newborn infants. Infant mortality rate in Kazakhstan is considered to be high as it was 17.32 (per 1,000 live births) in 1999 and even today it stands at 16.19 (per 1,000 live births) (2009). (Demographic yearbook, 2011) Also one of the main problems of mortality in Kazakhstan is maternal mortality ratio which was significantly high in 1999 at 65.3 (per 100,000 live births) and is still quite high today with 36.8 (per 100,000 live births) in 2009.

Evident high levels of mortality led the government to pay more attention to healthcare system. In 2009, Kazakhstan adopted the new legislation on population health which is aimed at providing wider extent of attention to the medical sphere of the country (Kazakhstanskaya Pravda, 2009). Despite that, it requires considerably more attention since mortality still remains at comparatively

high levels because of several reasons such as: social and economic conditions, pollution and environment, service and accidents.

The life expectancy at birth had also varied as the mortality level experienced its sharp increase during the 1990s. As seen in figure 6, life expectancy significantly dropped between 1993 and 1999.

Fig. 6: Trends in the life expectancy at birth, in Kazakhstan 1991-2010



Source: Agency of Statistics of Kazakhstan

A slight increase in life expectancy occurred in the 2000s and did not fall after, although life expectancy is considered to be comparatively lower especially among male population. Considerable differentiation in life expectancy between male and female population occurred almost in all post-Soviet states (Sherbakova, 2011) as it has already been mentioned in the preceding sub-chapter. This difference in Kazakhstan is reasoned by high mortality level among male population due to cardiovascular diseases as well as accidents (Zhumasultanov, 2005).

It is essential to note that the changes in migration are not less important than changes in mortality levels. As mentioned above, after gaining the independence and up to 2004, Kazakhstan had negative net migration since European population (Russians, Ukrainians and Germans) were intensively moving to their motherland countries (Zhumasultanov, 2005). In consequence of emigration of European population, Kazakhstan has lost its population by ethnical belonging since ethnical composition in 1989 was according to demographic yearbook data (Yessimova, 2006) the following: Kazakhs 40.11 %, Russians 37.42 %, Germans 5.85 %, Ukrainians 5.41 %, Uzbeks 2.04 %, Tatars 1.98 %, Uighurs 1.12% and other ethnicities 6.08 %. The situation changed considerably in 1999 when the two significant waves of European population already left Kazakhstan: Kazakhs

represented 53.30 %, Russians 30.02 %, Germans 2.38 %, Ukrainians 3.68 %, Uzbeks 2.47 %, Tatars 1.67 %, Uighurs 1.41 % and other ethnicities 5.07 %.

Today, the ethnical representativeness in Kazakhstan has stabilized with the two major ethnic groups of Kazakhs and Russians as before. However, the proportion is not the same as it used to be since Kazakhs account for a considerably higher proportion (2011): Kazakhs 64.03 %, Russians 22.83 %, Germans 1.10 %, Ukrainians 1.95 %, Uzbeks 2.92 %, Tatars 1.24 %, Uighurs 1.42 % and other ethnicities 4.51 %. Thus, due to migration processes upon adopting the independence in Kazakhstan, the ethnical picture of the state has changed. As a result the number of European population has decreased and Turkic (Kazakhs, Uzbeks, Uighurs, and Tatars) population has increased except for Tatars.

Changes in the demographic events have been influencing the population development of Kazakhstan since 1991. Population size shrunk abruptly in the 1990s and rose in the 2000s due to natural increase as a result of fertility increase as well as migration inflow of Oralmans. Those demographic changes have helped Kazakhstan to recover from its crisis and tough times in the beginning of the 1990s. However, the problems are not fully solved, since Kazakhstan is considered to be under populated state with population density as 5.9 people per square km in 2010 (Demographic Yearbook, 2011). In these means, the government trying to support fertility process and has invited Kazakh Diasporas back to their home country in order to increase population size (Kazakhstanskaya Pravda, 2009).

The question of the population growth takes special interest among scientists, analysts and politicians considering that the main demographic aim specified by the government was population increase. This aim alongside with its implementation was analyzed by the Agency of Statistics of Kazakhstan as well as the UN organization. Their forecasts vary between each other with a great extent. The Agency of Statistics of Kazakhstan has predicted that during each five year period the population would be increasing by one million, what will let the country reach 19.8-20.9 million people by 2030, and 23.5-26.8 million by 2050 (Ibrayeva, 2006). This forecast seems to be positive because there is an assumption that each five years there will be an increase of population by one million but every five years will most likely have different levels of population growth. Population increase at the end of the 2000s was based on two waves of natural changes, when fertility rose among the "baby-boom" generation (1980s) who reached their reproductive age and gave birth and also by the postponed children of the 1960-1970s generations. Furthermore, the flow of the Oralman immigrants has increased.

Population development will most probably rely on the next generation of 1990s which is less populated than 1980s generation and besides, they (generation of 1990s) have different views towards the modern and more independent life style.

The population forecast offered by the UN organization in 2008 assumed that by 2050 the population of Kazakhstan will represent 18.0 million people according to medium variant of forecast (Sherbakova, 2009). However, in the 2010 revision the UN organization predicted that by

2025 the population in the country will reach 18.3 million people, in 2050 it will be 21.2 million, in 2075 it may grow up to 23.2 million and in 2100 it will probably reach 24.8 million people (UN Population Division, 2010). So, in comparison with the forecast of the Agency of Statistics of Kazakhstan, the UN estimates expect more than 23 million people in Kazakhstan not earlier than by the end of the twenty first century.

The changes in population size as well as population development will be seen with time, although, in order not to lose the main resources of the state i.e. its population, the government needs to carefully improve economical, social, environmental and health conditions within the country.

5.3 Fertility development in Kazakhstan

Fertility indicators are considered to be one of the main features determining reproductive behavior of the population. With regards to time changes, developments and modernization, the levels of fertility have been changing influencing a new formed reproductive behavior. Reproductive behavior in Kazakhstan underwent through different stages of changes with three familial generations including families of elder generation who used to have 4-5 children on average, families of the next generation which normally had 3-4 children and the youngest generation that stabilized the fertility level at 2-3 children. This distribution is proven by the total fertility rate that equaled to 4.50 live births per woman in 1959, fell to 3.26 by 1969, to 3.03 in 1979, to 2.84 in 1989 and by 1999 dropped below the replacement level at 1.79 (Yessimova, 2006). This decline in fertility level had an obvious demographic transition movement caused by social and economic development as well as the new modern life style.

After the collapse of the USSR the fertility issue required more attention as the risk of population decline became evident. The 1990s was considered as a crucial time when the old values died and the new ones were not found yet, therefore family values, marriage status and reproduction process need to strengthen them (Valitova, 2010).

Classification of births by marital status (tab. 5) has the following meanings: married - birth occurred in marriage, single - the registration of the child birth was done by a mother without paternity, unmarried (cohabitation) – the registration of the child birth was done by a mother and paternity was recorded by mutual statement of both mother and father or by court decision. Therefore marital births characterized in marriage, while extramarital births take place among single mothers and those who lives in cohabitation.

The differentiation along the presented 1999-2010 years (tab.5) shows the increase of extramarital births by 18,319 births (single and cohabitation).

Tab.5 Number of births by vitality, mother's marital status and child's birth order in Kazakhstan

	1999	2000	2001	2002	2003	2004	2005
Live births	217,578	222,054	221,487	227,171	247,946	273,028	278,977
Still births	1,899	1,812	1,719	1,748	1,768	1,729	1,882
Total births	219,477	223,866	223,206	228,919	249,714	274,757	280,859
Marital status	of mother						
single	29,812	31,665	35,531	38,128	37,126	40,001	39,601
married	165,619	167,653	165,240	168,608	186,515	205,024	210,922
cohabitation	22,147	22,736	20,716	20,435	24,305	28,003	28,454
Birth order							
1st order	95,087	97,388	97,483	98,484	108,794	117,180	120,693
2nd order	63,030	64,957	63,082	66,655	72,111	79,354	81,208
3rd order	31,855	33,331	32,700	34,737	38,297	43,912	44,644
4th and over	27,606	26,378	28,222	27,295	28,744	32,582	32,432

	2006	2007	2008	2009	2010	2010-1999
Live births	301,756	321,963	356,575	357,552	367,752	150,174
Still births	1,987	2,112	3,798	3,602	3,403	1,504
Total births	303,743	324,075	360,373	361,154	371,155	151,678
Marital status	of mother					
single	38,471	38,604	44,312	41,596	39,227	9,415
married	233,399	254,141	281,195	284,849	297,474	131,855
cohabitation	29,886	29,218	31,068	31,107	31,051	8,904
Birth order						
1st order	128,452	139,494	157,850	151,789	149,602	54,515
2nd order	87,397	90,999	98,487	102,537	106,558	43,528
3rd order	48,787	51,597	55,986	57,968	61,671	29,816
4th and over	37,120	39,873	44,252	45,258	49,921	22,315

Note: extramarital births is a sum of births of single mothers and those living in cohabitation
Source: Agency of Statistics of Kazakhstan

Regarding the live and still births let us make a remark since definitions officially changed between 2007 and 2008 years. The live birth is considered to be the complete expulsion or extraction of a baby from the mother when the duration of the gestation has reached 28 weeks and over, which, after such separation, breathes or shows any other evidence of life, such as beating of the heart, pulsation of the umbilical cord, or definite movement of the voluntary muscles; or the baby is born earlier than 28 weeks of gestation and has been alive for more than 7 days (Demographic yearbook, 2007). In recent years the definition of live birth has changed in concordance with the World Health Organization standard and in some extent due to occurrences of births earlier than 28 weeks of pregnancy.

According to demographic yearbook 2011 the live birth is defined to be the complete expulsion or extraction from the mother of a baby, irrespective of the duration of the gestation, which, after such separation, breathes or shows any other evidence of life, such as beating of the heart, pulsation

of the umbilical cord, or definite movement of the voluntary muscles, whether or not the umbilical cord has been cut or the placenta is attached.

A rapid increase in the number of live births from 2007 to 2008 (tab. 5) occurred as a result of changes in definitions. Such increase can be observed among the still births as well (tab. 5) since their definition has changed in the same years (2007-2008). Starting from the year of 2008 perinatal deaths got included in the category of still births (Demographic yearbook, 2011).

The number of births among single and unmarried mothers during each presented year represents the trend of increasing number of extramarital births (single and cohabitation). Such phenomenon mostly occurred in Northern and Central parts of Kazakhstan (Agybayeva, 2006) where public opinion does not have an influence as in the South Kazakhstan since Northern and Central parts are less traditional and have substantial amount of Slavic population.

The rise of extramarital fertility indicates that family institution is not strong as it used to be centuries ago and during the Soviet period.

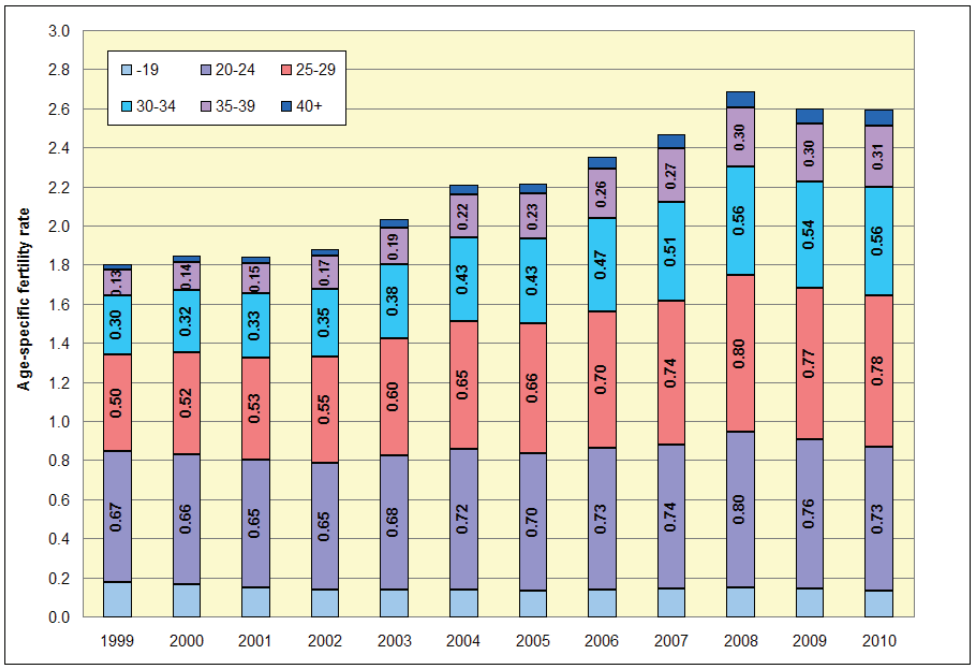
Changes in social values such as family institution might be discussed but the harm of it is likely to appear with time. The increased number of still births (tab. 5) has already been identified by the poor medical care system and environmental conditions which have to be improved since Kazakhstan chose the way towards modernization but the number of still births proved that proper high standard measures have not been taken yet.

At first, the trend of increased still birth rate was determined by its environmental conditions as the highest levels (11.64 (per 1,000 births) in Atyrau, 10.75 in Mangystau and 10.65 in Aktobe) occurred in the three oil production regions of West Kazakhstan. With regards to medical services, it needs improvement and renovation in each region of Kazakhstan.

Despite of disadvantages such as increased number of still births, the trend in fertility development has risen during 1999-2010 as shown in the total and by age fertility rate statistics (fig. 7).

The peak of fertility increase occurred in 2008 when reproduction levels rose in each age group even among the women at the age of 35-39. Since economic stability became explicit after the mid 2000s it enables women to implement their postponed childbearing. The same increase in fertility levels took place in urban and rural areas of Kazakhstan (fig. 8 and 9).

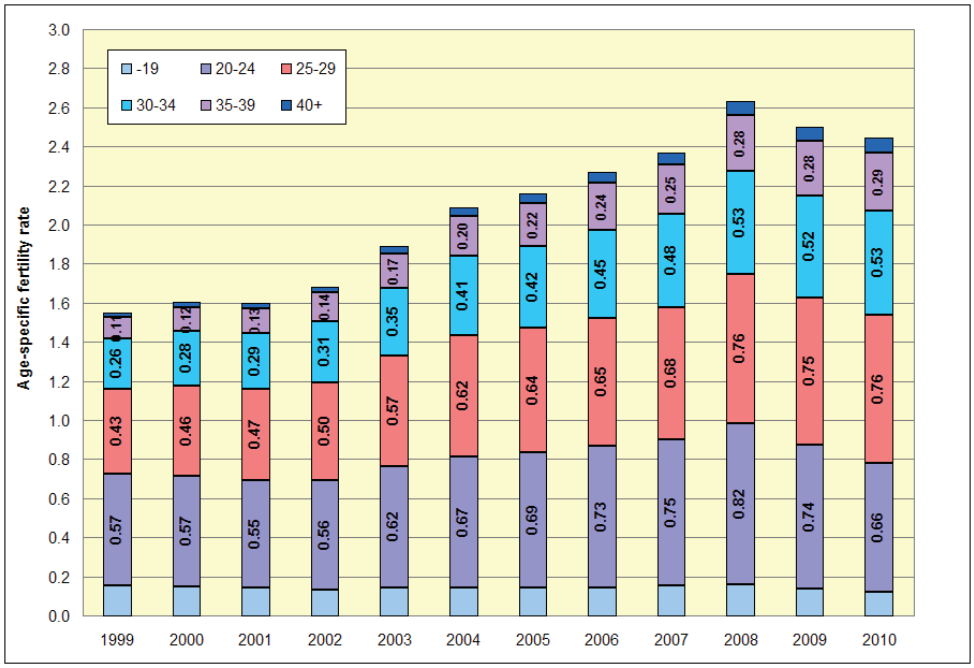
Fig. 7: Trends in the age-specific fertility rates in Kazakhstan, 1999-2010



Note: Five year rates represent the sum of rates by unit of age

Source: Author's calculation based on data from the Agency of Statistics of Kazakhstan

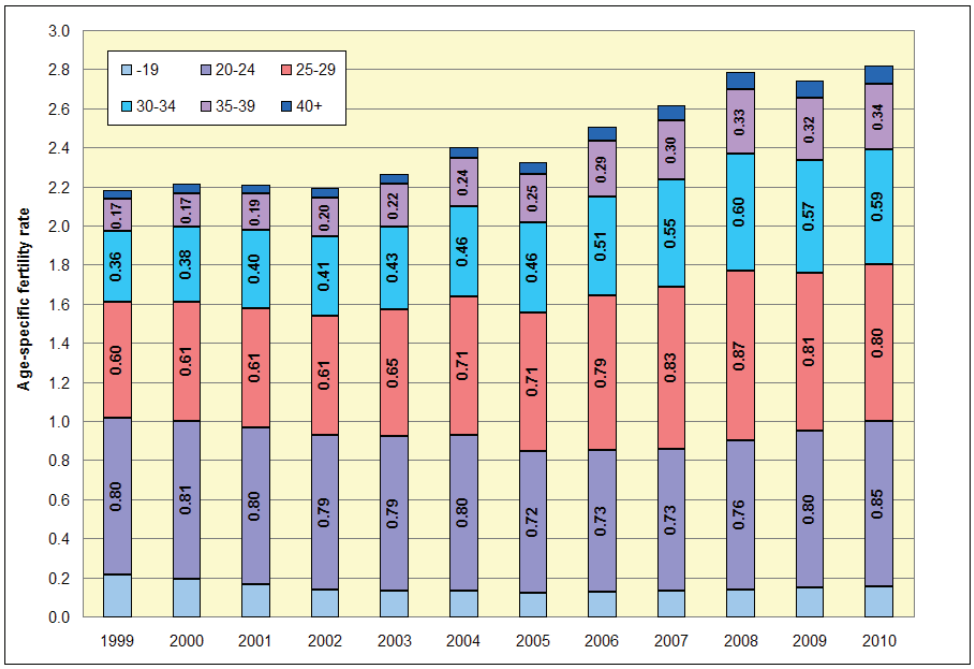
Fig. 8: Trends in the age-specific fertility rates in urban part of Kazakhstan, 1999-2010



Note: Five year rates represent the sum of rates by unit of age

Source: Author's calculation based on data from the Agency of Statistics of Kazakhstan

Fig. 9: Trends in the age-specific fertility rates in rural part of Kazakhstan, 1999-2010



Note: Five year rates represent the sum of rates by unit of age

Source: Author's calculation based on data from the Agency of Statistics of Kazakhstan

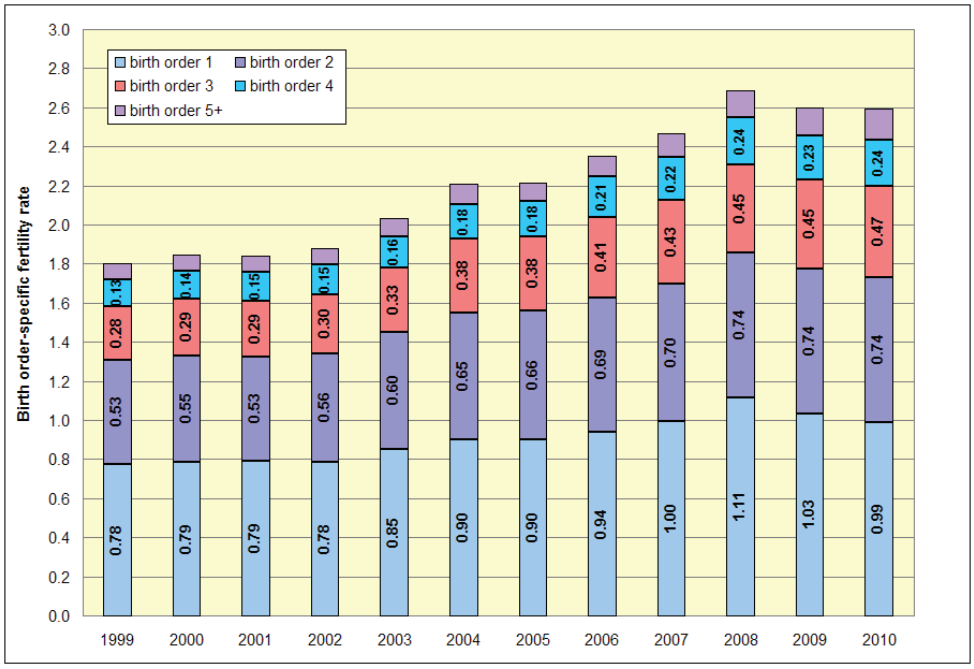
The differentiation of fertility rates between urban and rural areas shows that rural fertility made a significant contribution to the overall fertility because of which Kazakhstani demographers pointed out that government needs to support the rural areas of the country to a greater extent (Alekseenko, 2003). In 2003 the government adopted the program for 2003-2005 to support rural areas and the villages. In the same year (2003) targeted support for the childbearing process has commenced across Kazakhstan, where women who give birth get the lump sum with a flat rate for a child until he/she reaches the age of one year. This program continues up to date and the amount has risen due to economic reasons and improved living standards. Today, the lump sum for the first, second and third child equals to 261 Euros and for the forth and more it is 436 Euros. The flat rates differ according to child birth order: the first child 48 Euros, the second 56 Euros, the third 65 Euros, and the forth and over 74 Euros. This program does not give significant support, therefore, does not seem to be attractive to all groups of population since the subsistence minimum level in Kazakhstan is 86 Euros per person and in reality it is much higher (Kazakhstanskaya Pravda, 2012). So, middle class families cannot rely on this program as the expenditures for raising a child are much higher.

5.3.1 Dynamics of fertility by birth order

The difference in the lump sum and flat rates according to the child order is aimed at valuing the importance of large families which used to be widespread among Kazakh population before. For this reason, assessing the changes of child birth order has a significant importance.

As seen in figure 10, from 1999 to 2010 the number of live births has increased in every birth order. The significant increase occurred among the first, second and third order children, although the augment in the fourth, fifth and over orders is also important.

Fig. 10: Trends in the birth order-specific and total fertility rates in the Kazakhstan, 1999-2010



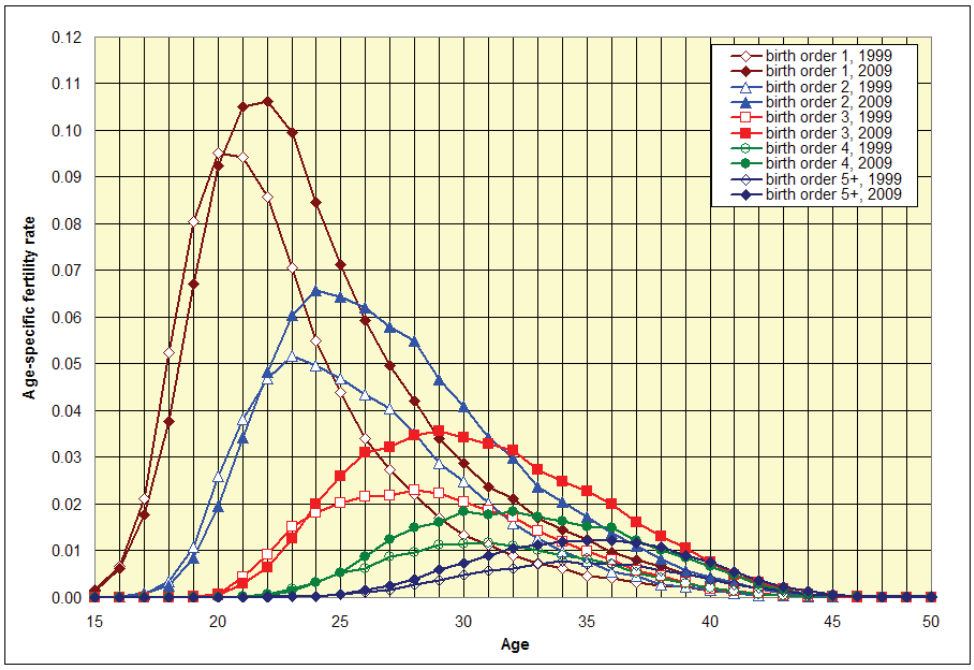
Note: Rates of the second kind

Source: Author's calculation based on data from the Agency of Statistics of Kazakhstan

As mentioned above, the third, fourth and fifth order children relate to the postponed childbirth in the 1990s by the generations of the 1960s and partly of the 1970s. Therefore, such an increase (in mid of 2000s) occurred as a compensative fertility but the question is whether the generations of the 1980s, 1990s and the following ones will have more than two children.

The relatively steady increase of birth-order specific fertility rate was observed in each child order group during 1999 – 2010 but these changes did not appear to be significant (except first birth order) since the total fertility rate rose with the growth rate by birth order correspondingly. Thus, the observation of the age-specific fertility rate by birth order and mother's age could clarify the occurrence of changes or their absence (fig. 11).

Fig. 11: Changes in age and birth order specific fertility rates between 1999 and 2009



Note: computed from age and birth order specific rates of the second kind

Source: Author's calculation based on data from the Agency of Statistics of Kazakhstan

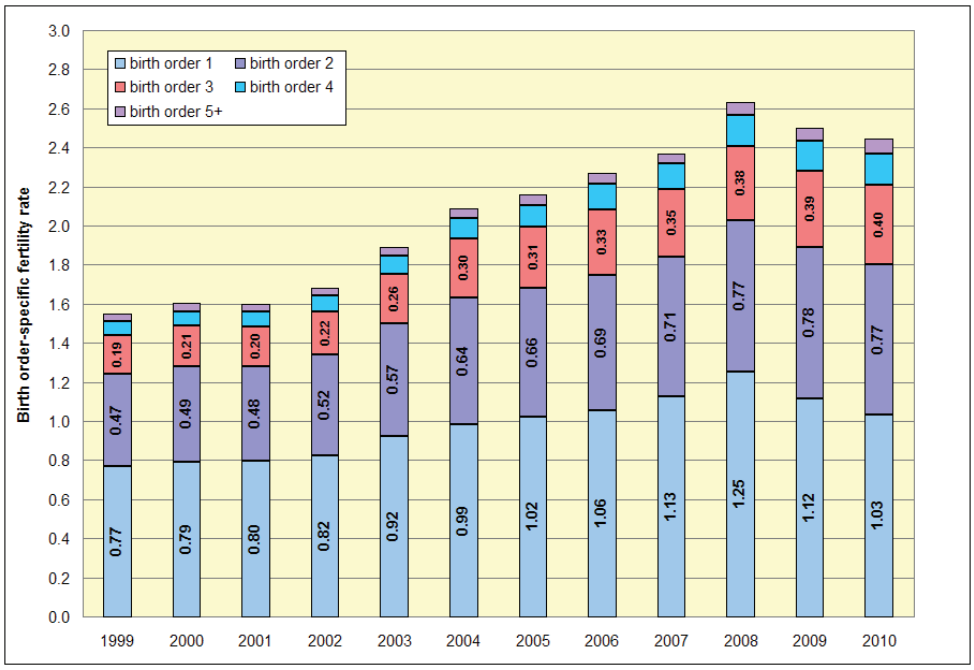
It is a well known fact that shift in the age of mothers directly identifies the changes in reproductive behavior, and as it can be seen from figure 11, during the ten years between 1999 and 2009 the age of mothers increased among the first and second birth orders. In 1999 the highest intensity of given first births appeared among females at the age of 20, and in 2009 this intensity shifted to 22 year old women. With regards to the second birth order, the highest intensity occurred among 23 old women in 1999 and 24 year old ones in 2009. The difference among the third, fourth, fifth and over birth orders appeared only in the number of births but there was no significant shift in women's age.

Aforementioned fertility changes determined the fertility ageing that took place among young women with regards to their implementation of first and second childbearing. As for the highest birth order, it might only be recuperative fertility as it has been explained before.

To the same extent it is also important to analyze the changes between the urban and rural fertility rates by birth order. Since we have already mentioned that fertility levels differ between urban and rural women, it should be examined whether there are any differences in fertility by the birth order.

General trends of birth order-specific total fertility rates by the place of residence during 1999-2010 show relatively steady increases in almost all birth orders presented (fig. 12 and fig. 13).

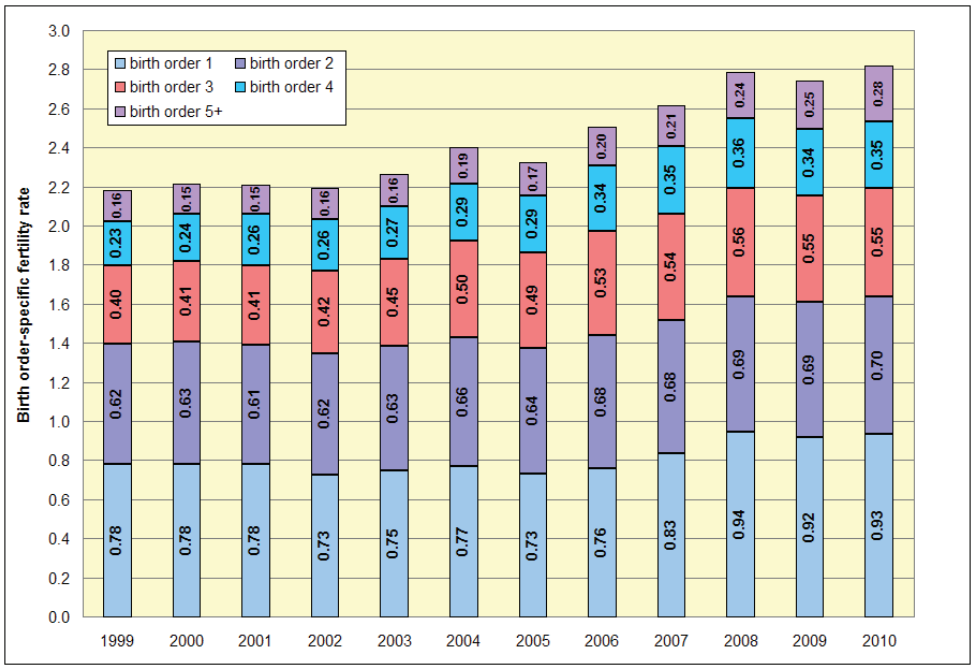
Fig. 12: Trends in the birth order-specific and total fertility rates in urban areas of Kazakhstan, 1999-2010



Note: Rates of the second kind

Source: Author's calculation based on data from the Agency of Statistics of Kazakhstan

Fig. 13: Trends in the birth order-specific and total fertility rates in rural areas of Kazakhstan, 1999-2010



Note: Rates of the second kind

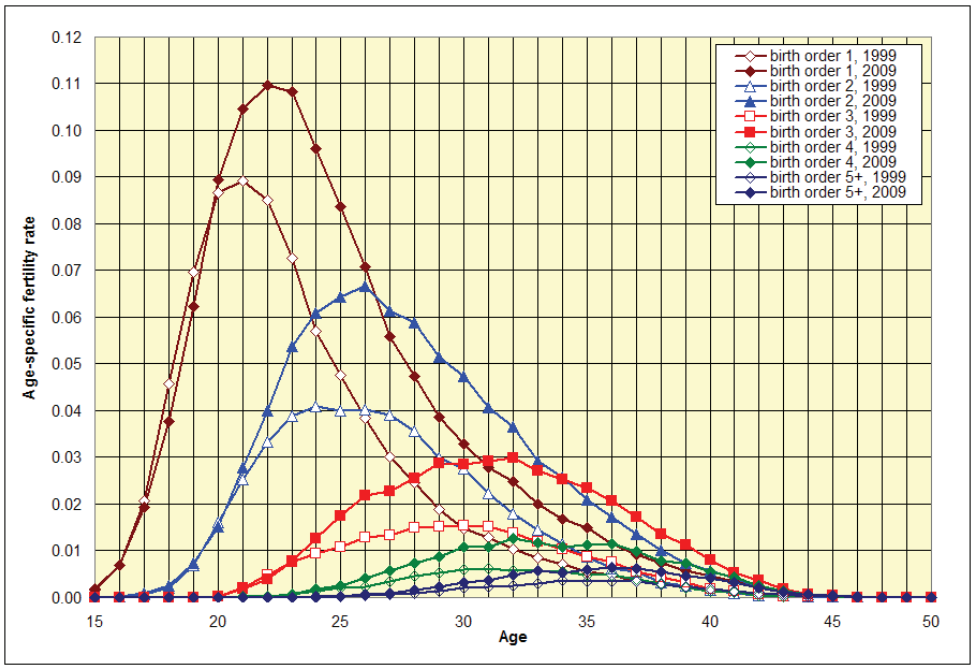
Source: Author's calculation based on data from the Agency of Statistics of Kazakhstan

As for the urban fertility by birth order, it is evident that the increase occurred in every birth order though it is more significant in the first and second ones. In contrast to the urban fertility by birth order, the rural fertility showed considerable increase not only in the first and second orders but relatively equally in each order.

The highest increase in each order in both urban and rural areas of Kazakhstan occurred in the phenomenal year of 2008. As it has already been mentioned, by that time the economic and social conditions had improved explicitly. In urban areas of Kazakhstan the effect of substantial increase occurred in the first child order, whereas in rural areas it was significant among the first, third and fourth order children. Thus, rural women have covered the compensative fertility of third and fourth child to a greater extent.

Changes in the age of a mother also occurred between 1999 and 2009 in both residential areas (urban and rural). However, it was more considerable in urban areas, especially among the first and second births (fig. 14).

Fig. 14: Changes in age and birth order specific fertility rates between 1999 and 2009, urban Kazakhstan



Note: computed from age and birth order specific rates of the second kind

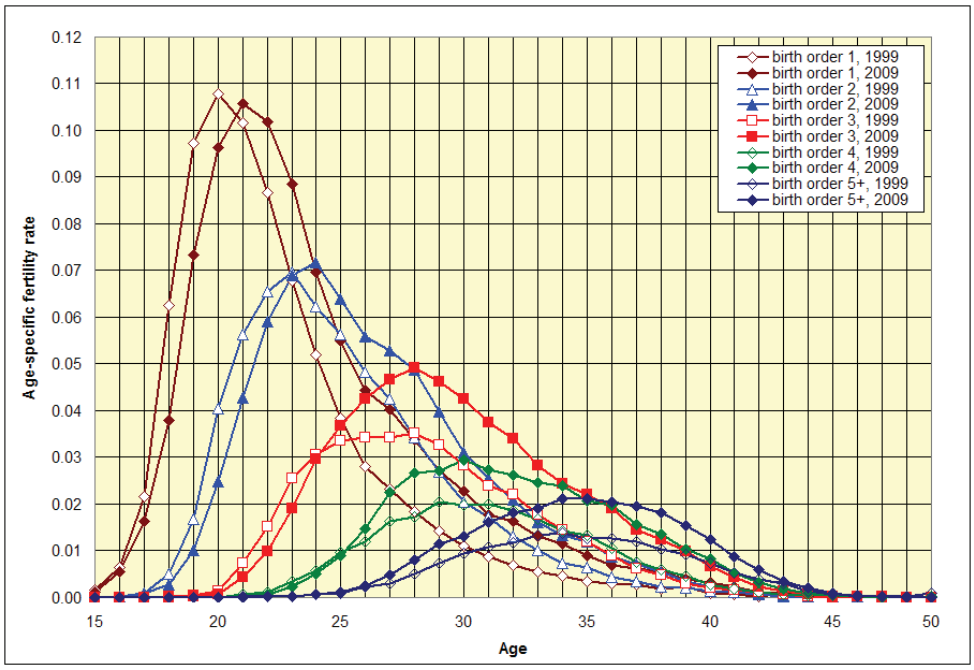
Source: Author's calculation based on data from the Agency of Statistics of Kazakhstan

As seen from figure 14 the highest intensity of having first child was at the age of 21 in 1999 and by 2009 it rose up to 22 years in urban areas. A comparative increase of the highest intensity occurred in the second child birth when between 1999 and 2009 the age of a mother grew from 24 to 26 years.

As for the rural population, the highest intensity of age-specific fertility rate did not change considerably by the age of a mother during the period from 1999 to 2009 (fig. 15). The shift

occurred only with the difference of one year among the first and second birth order, when it increased in the first birth from age 20 to 21 and in the second birth it increased from 23 to 24 years of age.

Fig. 15: Changes in age and birth order specific fertility rates between 1999 and 2009, rural Kazakhstan



Note: computed from age and birth order specific rates of the second kind
Source: Author's calculation based on data from the Agency of Statistics of Kazakhstan

The changes in the age of a mother especially among the first and second child revealed that the reproductive behavior of women is changing towards postponement of the first birth delivery. Such shifting signalizes the alarming consequences since the postponement of the first child birth has an influence on reducing number of children (Bongaarts and Feeney, 1998). This fact has already taken place in European countries. Therefore, changes in the age of women becoming mothers require much more attention.

In order to clarify the shift in the age of a mother, the mean age at childbearing was observed (tab. 6). In general, the mean age at childbearing from 1999 to 2010 has increased almost by two years from 26.43 to 28.32 years of age. This fact indicates the occurrence of fertility ageing in the entire Kazakhstan.

Tab.6 Mean age at childbearing according to child's birth order and by place of residence, Kazakhstan 1999-2010

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Kazakhstan												
1st order	23.43	23.65	23.79	23.97	24.19	24.23	24.38	24.47	24.67	24.97	24.94	25.08
2nd order	26.53	26.73	27.00	27.18	27.35	27.57	27.71	27.79	27.89	27.87	27.79	27.83
3rd order	29.59	29.92	30.16	30.39	30.60	30.81	31.04	31.12	31.19	31.17	31.12	31.13
4th order	31.96	32.09	32.27	32.39	32.51	32.73	32.98	33.06	33.07	33.05	33.11	33.08
5th and over	35.22	35.44	35.30	35.34	35.31	35.47	35.54	35.55	35.51	35.46	35.44	35.45
total	26.49	26.73	26.91	27.15	27.31	27.54	27.70	27.87	27.99	28.07	28.12	28.32
Urban												
1st order	23.77	24.02	24.15	24.33	24.42	24.44	24.56	24.66	24.83	25.03	25.22	25.53
2nd order	27.31	27.57	27.84	28.05	28.16	28.34	28.40	28.44	28.53	28.37	28.42	28.60
3rd order	30.51	30.89	31.12	31.34	31.58	31.75	31.92	32.01	32.10	31.92	31.95	31.96
4th order	32.77	32.92	33.15	33.30	33.34	33.61	33.78	33.86	33.92	33.82	33.94	33.87
5th and over	35.48	35.72	35.50	35.72	35.65	35.89	35.90	36.01	35.85	35.73	35.82	35.82
total	26.41	26.70	26.86	27.10	27.22	27.45	27.56	27.70	27.75	27.80	28.07	28.42
Rural												
1st order	22.92	23.08	23.21	23.32	23.69	23.73	23.89	23.95	24.29	24.77	24.44	24.35
2nd order	25.66	25.74	25.99	26.06	26.22	26.39	26.63	26.77	27.02	27.12	26.84	26.63
3rd order	28.97	29.23	29.46	29.63	29.73	29.89	30.13	30.22	30.38	30.48	30.32	30.26
4th order	31.63	31.75	31.91	31.99	32.09	32.23	32.46	32.53	32.58	32.54	32.57	32.55
5th and over	35.21	35.39	35.28	35.24	35.20	35.30	35.37	35.33	35.35	35.30	35.26	35.30
total	26.60	26.78	26.99	27.22	27.43	27.66	27.88	28.10	28.25	28.39	28.18	28.16

Source: Author's calculation based on data from the Agency of Statistics of Kazakhstan

If considering the mean age at childbearing by the place of residence, it is the same increase (two years) that appeared in the entire Kazakhstan. Such changes occurred as a result of postponement of the first birth since this birth order expressed the highest increase of a mother's mean age in rural, urban areas as well as the country. The second birth did not show any substantial shift since it was a one year difference in the entire Kazakhstan and by place of residence as well.

The third birth order has the same influential effect as the first order. This increase in the third child order mean age was partly covered by the recuperative fertility which then resulted in a slightly higher mother's age.

The birth order fertility analysis showed the increase in every birth during 1999-2010. However, the substantial growth occurred in the first order in both (urban and rural) areas. As mentioned above, the effect of increase in the first births corresponds to females born in the 1980s who represented numerous generation and entered reproduction period in the 2000s.

When comparing findings by the place of residence it is evident that the significant increase of the first and second births took place among urban females, whereas the rural females showed a considerable increase in the number of the third, fourth and fifth birth orders. The fertility analysis includes the period of 1999-2010 when the living conditions improved substantially. Thereby, urban

women who are better educated participate in labor market, have better living conditions and accept contraception availability is more certain in the planning of the number of children. Increase of fourth and fifth birth orders in rural area indicates the presence of traditional model of reproductive behavior.

As for the shift in mother's age, young females who postponed the first birth, on average for two years, pose the high risk shortening the reproductive period.

5.3.2 Dynamics of fertility by ethnicity

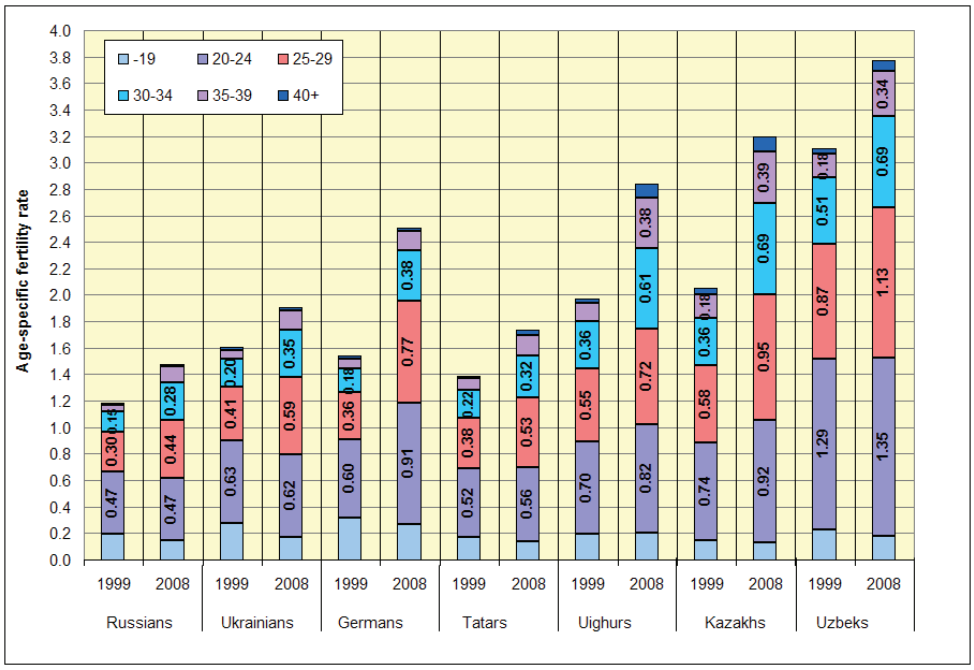
There is another factor which significantly influences fertility developments in Kazakhstan that is ethnical fertility. This factor called special attention among the demographers (Agadjanian, 2008) since Kazakhstan as a multinational country showed differences in fertility levels among so called Turkic ethnic group (Kazakhs, Uzbeks, Uighurs, Tatars) and European ethnic group (Russians, Ukrainians, Germans).

Higher fertility levels among the Turkic group can be traced to ancient times which remained high during the Soviet regime as it was noticeable even in the comparison table among the countries (fig. 3, 5.1 Kazakhstan). However, it has changed after the collapse of the USSR since the total fertility rate in Kazakhstan decreased from 2.84 live births per woman in 1989 to 1.79 live births per woman in 1999 as it has already been mentioned in the beginning of this sub-chapter. The general decrease of the total fertility rate occurred among each ethnicity. With fertility increase in recent time, it takes an important interest to observe the differences in the ethnic-specific fertility rate.

Since the data available by the ethnic fertility includes the period from 1999 up to 2008, it was decided to observe the changes of the nine year differences (fig. 16).

As seen from figure 16, the year of 1999 had dramatic fertility rates even among the Turkic ethnic group since only Uzbek ethnicity had the fertility level of 3.10 live births per woman while other Turkic ethnicities' total fertility rates stood even below the replacement level of 2.1: Kazakhs 2.05, Uighurs 1.97 and Tatars 1.39. With regards to European ethnic group, none of those had the total fertility level even close to the replacement fertility level in 1999: Russians 1.18, Ukrainians 1.61 and Germans 1.54. For the European ethnic group such a decrease in birth rates was not unprecedented, as even during the Soviet times they used to have on average two children or in some cases even one child per family.

Fig. 16: Trends in the age-specific fertility rates according to ethnicity, Kazakhstan, 1999 and 2008



Note: Five year rates represent the sum of rates by unit of age

Source: Author's calculation based on data from the Agency of Statistics of Kazakhstan

Considering the decline of fertility rates especially among the Turkic ethnicities provides the evidence that the crucial 1990s had influential consequences. Still, the reasons of lower fertility or postponed childbearing process in the 1990s could have had different basis among the Turkic group mostly because of instability and rapidly declining living standards, whereas among the European group the reasons might have been concealed in the plans to move to the countries of origin because during the 1990s the emigration of European population reached its high levels (especially in 1994 when the net migration level constituted -406,6 (population in thousands)).

The fertility rates increased in every ethnicity after the year of 1999 as presented in Table 7 (by each consequent year and place of residence) since stabilizing socio-economic situation gave an opportunity to realize their reproductive plans.

The highest total fertility rate was observed among the Uzbeks who kept it relatively high even in 1999, although the rate slightly decreased during the period from 2000 to 2002 when it dropped to less than three children on average. Corresponding total fertility rate trends by the place of residence occurred during 1999-2008 among Uzbeks (tab. 7).

The second ethnic group with higher total fertility rates is the Kazakhs. Their recovery from the difficulties of the 1990s became evident since the growth of fertility rates increased from the below replacement level 2.05 live births per woman (1999) to 3.19 live births per woman (2008) (tab. 7).

Tab.7 Total fertility rates according to ethnicity and by place of residence, Kazakhstan, 1999-2008

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Total										
Kazakhs	2.05	2.12	2.11	2.14	2.30	2.52	2.54	2.73	2.88	3.19
Russians	1.18	1.18	1.17	1.21	1.30	1.36	1.35	1.38	1.42	1.48
Ukrainians	1.61	1.60	1.59	1.60	1.71	1.76	1.73	1.80	1.80	1.91
Uzbeks	3.10	2.90	2.92	2.88	3.10	3.39	3.32	3.43	3.57	3.77
Uighurs	1.97	2.16	2.01	2.06	2.33	2.49	2.47	2.48	2.67	2.84
Tatars	1.39	1.32	1.28	1.41	1.48	1.64	1.61	1.70	1.72	1.73
Germans	1.54	1.50	1.55	1.65	1.75	1.93	1.98	2.02	2.14	2.51
Urban										
Kazakhs	1.82	1.90	1.88	1.97	2.23	2.49	2.60	2.75	2.80	3.04
Russians	1.11	1.11	1.11	1.16	1.27	1.35	1.36	1.39	1.37	1.43
Ukrainians	1.49	1.54	1.51	1.58	1.77	1.84	1.82	1.92	1.83	1.85
Uzbeks	2.58	2.51	2.36	2.36	2.59	2.94	2.99	3.11	3.53	3.35
Uighurs	2.06	2.19	2.03	2.13	2.54	2.82	2.82	2.58	2.55	3.09
Tatars	1.33	1.26	1.24	1.35	1.44	1.62	1.65	1.71	1.67	1.73
Germans	1.44	1.43	1.52	1.66	1.84	2.04	2.16	2.41	2.81	2.43
Rural										
Kazakhs	2.31	2.36	2.36	2.33	2.40	2.57	2.49	2.72	2.99	3.37
Russians	1.44	1.43	1.37	1.36	1.39	1.37	1.31	1.33	1.56	1.57
Ukrainians	1.80	1.68	1.72	1.62	1.61	1.64	1.57	1.59	1.52	1.53
Uzbeks	3.40	3.12	3.25	3.19	3.40	3.64	3.51	3.62	3.62	4.54
Uighurs	1.91	2.15	1.99	2.01	2.15	2.23	2.16	2.38	2.89	2.71
Tatars	1.60	1.53	1.44	1.64	1.65	1.75	1.46	1.65	1.66	1.39
Germans	1.67	1.59	1.59	1.61	1.63	1.78	1.76	1.62	1.58	1.73

Source: Author's calculation based on data from the Agency of Statistics of Kazakhstan

Even today, the Tatars remains to be a vulnerable ethnicity among the Turkic ethnicities as their reproductive behavior relatively corresponds to the Slavic ethnic group. That is the reason why during the recovery time of the 2000s Tatars were not able to reach even the replacement level fertility rates.

With regards to the European group, only Germans had higher fertility levels as 2.51 live births per woman (2008). This result may cause by small numbers of Germans population left in Kazakhstan. Since, German population decreased significantly during the time when Kazakhstan adopted its independence. As it was mentioned in the sub-chapter 5.2 (Population development in Kazakhstan), German population in Kazakhstan constituted 5.85 % in 1989, 2.38 % in 1999 and 1.10 % in 2011. Considering this fact it is evident that even with relatively significant total fertility levels German population in Kazakhstan will not grow substantially and also a selection effect could be taken into the consideration (emigration of those with low fertility).

As for the urban and rural fertility levels (tab.7), it has been found that every ethnicity showed a fertility growth during 1999-2008, however, among the Slavic population and Tatars the increase

was not significant. Moreover, the total fertility rate among the Ukrainians and Tatars in the rural areas decreased (tab.7).

When comparing the fertility rates between urban and rural areas it is quite phenomenal that the fertility rate is lower in rural areas (tab.7, 2008) among the Ukrainians, Uighurs, Tatars and Germans. The rural areas of Kazakhstan are predominantly inhabited by the Kazakh and Uzbek ethnicities. European population is mostly settled in the urban areas which is why the fertility rates differ between the two places of residence in such a way.

An important issue of how the age-specific fertility rate is distributed between European and Turkic groups according to women's age arouses interest. As shown in Figure 16, the European group of women for the most part relies on 20-29 ages interval to implement their childbearing process. Furthermore, the Ukrainian and German women showed a significant point of the age-specific fertility rate at the age of 15-19 with 0.31 for Germans and 0.27 for Ukrainians in 1999. This significantly high rate in 1999 seems paradoxical since during the time of crisis the European group of women preferred to marry earlier (Agadjanian, 1999), however, the implementation of reproduction used to be postponed.

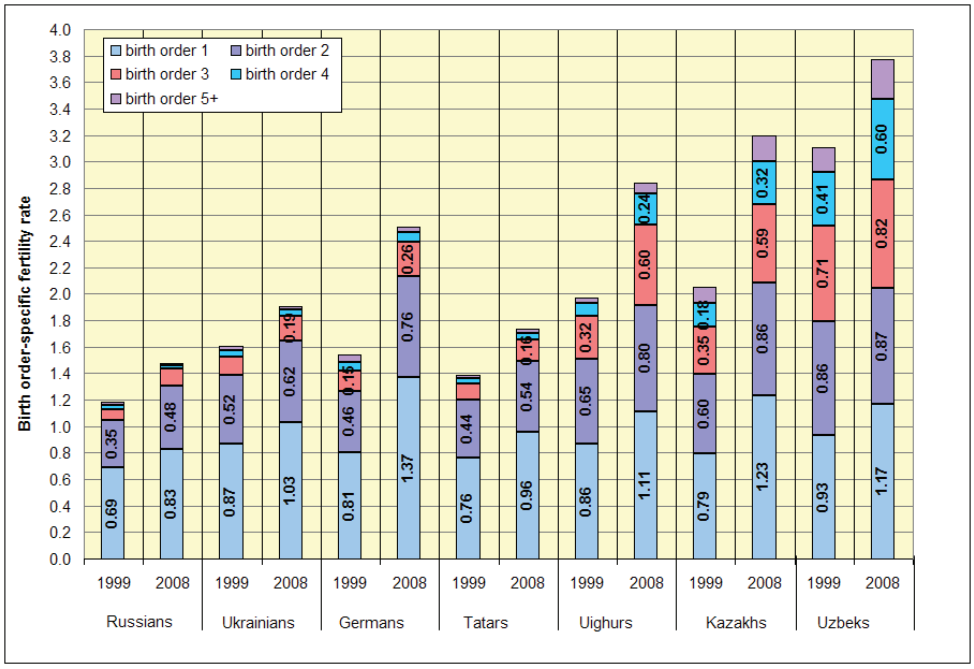
The Turkic group of women also relies on the same age interval between 20 and 29, however, their childbearing implementation continued with a considerable extent at the age of 30-34, especially in 2008 (fig.16). These occurrences are acceptable since Turkic group of women used to continue having children at a higher age as well; in general, up to forty years of age and sometimes even over (Yessimova, 2005). That is why the Uighur, Kazakh and Uzbek women at the age of 35-39 had the levels of age-specific fertility rate at 0.38, 0.39 and 0.34 which has accordingly reflected in the augmentation of the total fertility rate in 2008 (fig.16).

The next brief observation refers to the birth order-specific fertility rate presented by each selected ethnicity showing in 1999 and 2008 years (fig. 17).

Analysis of birth order-specific fertility rate started from the European group of women who used to have one child or two children. The Russians as a major ethnicity in Kazakhstan not only among the Europeans but, in general, who are on the second place in the country with regards to its population size, provide a significant portion of Kazakhstani population. Therefore it is quite important to observe the changes in Russian population of Kazakhstan. During the so-called years of economic stability (1999-2008), the first, second and third birth orders have slightly increased among the Russian women, however, the substantial part stick to the first and second births (fig. 17). Thus, it is unlikely that among the Russians there will be families with three children on average, most probably, it would stabilize with two children or even decrease to one.

As for the Ukrainian ethnicity, the picture is same as with the Russians, however, it can be specified that the substantial weight refers to the first births. There is some slight increase in the second birth order as well, but it is not comparable (fig. 17).

Fig. 17: Trends in the birth order-specific and total fertility rates, Kazakhstan, 1999-2008



Note: Rates of the second kind

Source: Author's calculation based on data from the Agency of Statistics of Kazakhstan

Much interest incites the development of fertility among the third European group, Germans, showing rapid increase in total fertility rate (fig. 17). This is likely determined by small numbers of the Germans left in Kazakhstan, and by the postponed of childbearing process in 1990s and its recuperation in 2000s. However, there is no much expectation that families with three children will occur frequently even though that increase in the third child births between 1999 and 2008 years appeared with difference towards increase with 0.11. This difference among the first and second child has a considerable growth as it is 0.56 among the first and 0.30 among the second birth order.

Women belonging to the Turkic ethnicities have had historically proven large families. Though, it should be noted that among the Tatars the decrease has emerged earlier compared to other ethnicities in the given group. Despite that fact the state most probably has to rely on the Turkic group since there are a few influential factors such as: existence of large families historically, strong public opinion, ties between the relatives and in some cases even arranged marriages.

The Kazakh ethnicity represents titular and majority of the population in the country, thus, the future trend of the fertility development of the Kazakhs is very important. The observation of their birth order-specific total fertility rate has become the main concern since the ethnicity has already experienced reduction of total fertility rate during the twentieth century: in 1959 it was 7.4 live births per woman, in 1979 the total fertility rate among the Kazakh women declined to 4.8 and by 1989 it reduced to 3.6 children (Aubakirova, 2005).

As shown in figure 17, a higher augmentation of the birth order-specific fertility rate among the Kazakh women occurred in the first order, while the second, third and fourth orders show a slight increase between 1999 and 2008. Thus, the fact of the rising specific fertility rate in the comparable extent only among the first order enables us to hypothesize that large families among the Kazakhs have left in the past.

The Uzbek ethnicity is considered to be as traditional as the Kazakhs. They stick to higher fertility as even in the crucial year of 1999 they had the total fertility rate at 3.10 live births per woman when the Kazakhs' rate was 2.05 children. This denotes the fact that even though the crisis influenced them, their reproduction level remained considerably the same. In this case, the birth order-specific fertility rate of the Uzbek ethnicity in Kazakhstan is important for the country. As revealed in figure 17, the fertility was kept at substantial levels in the third order, though the first order once again expressed the highest increase. Accordingly, it is becoming evident that even among highly traditional ethnicities the fertility has started to decrease which causes the number of children per family to diminish.

Among all the ethnicities of the Turkic group the Tatars experienced modernized fertility earlier and it has become similar to the fertility rates of the European group. Due to that fact, we do not expect that an increase in the birth order will take place in the third and higher births (fig. 17).

The reproductive behavior of Uighurs appeared to be slightly better than that of the Tatars. However, Uighur families have already turned their reproduction towards two children on average and by the 2000s the increase of reproduction occurred in the third births (fig. 17). Although, they had a significant increase in the first child same as with all other ethnicities in Kazakhstan.

It is vital to examine shifting in birth order and mother's age in order to understand whether there are any changes in the mean age at childbearing by ethnicity since this indicator shows the ageing of fertility or a decrease towards younger age. For this reason, the following table was analyzed (tab. 8). In order to spot the dynamics of changes in the mean age at childbearing along the years that were available among the existing data we have selected three years: 1999 as a crucial year of crisis, the year of 2003 as a starting point of recovery marking hypothetical stability of economy and 2008 as a year of achieved socio-economic stability (tab. 8).

Upon analyzing the mean age at childbearing it has become evident that in total among all the ethnicities there is no comparable growth as there was approximately a one year difference with the exception of the Germans who showed almost a two year difference (1999-2008). However, the first birth has quite a significant effect as the increase equaled to two years (1999-2008) which specifies the postponement of the first birth delivery. The only three Turkic ethnicities including Uzbeks, Uighurs and Tatars have a one year difference in the first child (1999-2008). The situation with the second child is slightly better among all the ethnicities (tab.8) except for the Ukrainians who as the European group postponed second delivery therefore the increase indicates two years. In the higher birth orders the increase was at one or two years difference as well and in the fifth there was almost no difference. However, the fifth child today is a rare occasion.

Tab.8 Mean age at childbearing according to birth order and ethnicity, Kazakhstan, selected years

	Kazakhs	Russians	Ukrainians	Uzbeks	Uighurs	Tatars	Germans
			1999				
total	27.10	25.08	25.16	26.25	26.62	25.96	24.85
1st order	23.88	22.76	22.68	22.77	23.62	23.49	21.83
2nd order	26.51	27.12	26.66	24.74	26.86	27.73	26.20
3rd order	29.64	30.54	30.31	27.84	30.88	30.76	30.21
4th order	32.18	32.45	32.47	30.89	33.38	32.42	31.52
5th and over	35.70	34.60	34.30	34.46	36.54	36.00	34.95
			2003				
total	27.81	25.99	26.14	26.72	27.59	26.77	25.06
1st order	24.61	23.48	23.37	23.60	24.36	24.17	22.10
2nd order	27.29	28.20	27.88	24.90	27.30	28.62	26.56
3rd order	30.67	31.28	31.21	28.40	31.82	32.07	30.62
4th order	32.62	32.74	32.92	31.06	34.73	33.89	33.40
5th and over	35.52	34.95	34.97	34.37	36.20	35.96	35.56
			2008				
total	28.47	26.91	26.82	27.34	28.33	27.28	26.11
1st order	25.28	24.53	24.45	23.63	24.66	24.94	23.74
2nd order	27.75	28.96	28.60	25.38	27.85	28.86	27.79
3rd order	31.28	32.03	31.81	28.87	32.19	32.24	30.55
4th order	33.20	33.50	31.75	31.73	34.67	34.06	32.45
5th and over	35.61	34.91	35.18	34.54	36.16	35.81	34.65

Source: Author's calculation based on data from the Agency of Statistics of Kazakhstan

The wider analysis based on the data obtained from the Agency of Statistics of Kazakhstan presented in this chapter was aimed to analyze the reproductive behavior of Kazakhstani women through its fertility developments during the last decade (1999-2010). The analysis showed that in general during the mentioned years the level of fertility has increased in the entire Kazakhstan as well as by the place of residence. In connection with the general increase the difference between urban and rural fertility rates tapers. The age of a mother has risen towards fertility ageing due to the postponement of having the first child for the most part.

According to the ethnic differentiation, the European group and the Tatars are at risk to lose their population due to the low fertility rate since it has not reached the replacement level during the observed years. The fertility among the Turkic population is relatively acceptable, though, with the birth order difference it was noted that the Turkic group of ethnicities is also changing its fertility towards the modernized one.

Summing up, while carrying out the thorough fertility analysis in Kazakhstan, we ranged the fertility by the three factors (age, ethnicity and place of residence) using cross-classified data in order to understand the main reasons of changes in fertility between years 2008 and 1999 (tab. 9). A method of standardization and decomposition (das Gupta, 1993 methods described at pages 63-69)

showed the impact of the change in three structural factors (age, ethnicity, place of residence), and accordingly fertility intensity on the change in general fertility rate between years 2008 and 1999.

Tab. 9 Standardization and decomposition of fertility rates in Kazakhstan, 1999 and 2008

	Standardization		**Decomposition**	
	2008 (population 2)	1999 (population 1)	Difference (effects)	Percent distribution of effects
Age	63.95	64.64	0.70	2.65
Ethnicity	63.38	65.21	1.83	6.96
Urban-rural	64.36	64.21	-0.16	-0.59
Rates	52.31	76.27	23.96	90.99
GFR	50.97	77.31	26.34	100

Source: Author's calculation based on data from the Agency of Statistics of Kazakhstan

Based on the results, the increase in the total fertility between 1999 and 2008 was caused by the fertility intensity increase with 90.99 %, while the structural factors as ethnic factor determined at 6.96 %, the age component identified at less importance with 2. 65 % and the differences in urban-rural fertility did not turn out to be significant not having shown any effect.

From these finding we may conclude fertility increase between 1999 and 2008 took place due to the increase in fertility rates in all ages, ethnic groups, and urban-rural areas. The shift in ethnic structure and age change contributed slightly to fertility upward trend. However there is no hope to rural fertility since it tapers to urban pattern.

Chapter 6

South Kazakhstan and its specification

South Kazakhstan occupies a special position among 14 Kazakhstani regions since it represents a relatively small territory 4.3 % (of the entire area of Kazakhstan, Demographic yearbook, 2008) with significant proportion of the population at 15.61 % (Demographic yearbook, 2011). From the cultural point of view this region is considered as the traditional one.

In order to emphasize territorial feature of the South Kazakhstan on the background of entire country a map was initiated

Fig. 18: The Kazakhstan map

Note: South Kazakhstan region emphasized in dark color
Source: A.A. Smailov, Almaty, 2001

6.1 South Kazakhstan within the regional system of Kazakhstan

South Kazakhstan was delimited as a region in 1932 with a territory of 487,6 thousand square kilometers. In 1964 due to the state reforms the South region was delimited again by reducing the total area of the southern land down to 117,3 thousand square kilometers that remains the same today. South Kazakhstan borders Uzbekistan and three regions of Kazakhstan: Karagandy, Kyzylorda, Zhambyl. The neighborhood with Uzbekistan has apparently determined the traditional culture of people living in the South. However, the existence of a strongly traditional way of living has also been identified by ethnical distribution of the population. According to statistical data the representativeness by ethnicity is the following: the Kazakhs 70.19 %, the Uzbeks 17.43 % and Russians represent 6.15 % of the population. This fact indicates South Kazakhstan as the only region where the second densely populated ethnos are Uzbeks.

As for the three bordering regions, Kyzylorda and Zhambyl have more in common with the South. First of all, the three of them are located in the Southern territory and secondly, there is an evident prevalence of the Kazakh population since the Russians do not take up significant part like in the entire Kazakhstan. Therefore, Kyzylorda and Zhambyl as well as the South lead a conservative way of life which looks a bit paradoxical since socio-economic situation has improved considerably over the last decade and from the first sight people from the South seem to become more modernized. Mentally, people from the South are most likely not ready to accept the modern way of life with its independence due to the strong ties among the relatives, public opinion, specified and pronounced way of living by elder generations which have a powerful influence. In spite of this slight changes among the youth towards modern way of life have become noticeable in recent years.

Border with Karagandy is one fact that unites those regions as Karagandy has a significantly high presence of the Russian population. Owing to that Karagandy has started leading a modern way of life much earlier even in demographic sense what will be discussed in the next sub-chapter.

From the historical point of view South Kazakhstan used to be a transitional point of the Great Silk Road through which all trade of that period used to go through. Therefore, it identified the South as a predominantly Muslim region since trade along the Great Silk Road was mostly carried out by Persian and other Turkic groups of ethnicities. The Northern part of Kazakhstan as well as centrally located Karagandy had higher intensity in political and economic relationships with Russia.

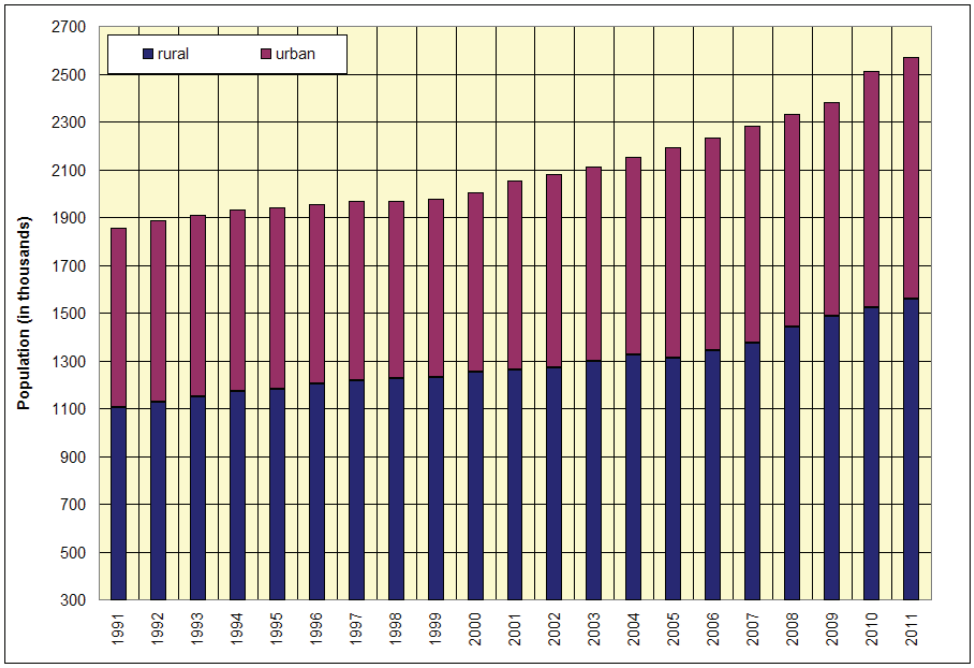
Considering South Kazakhstan from its demographic perspective a specific weight of the region can be indicated among the whole Kazakhstani population. As it was mentioned above, South Kazakhstan has a small territory with considerable amount of population. Due to this fact South Kazakhstan is characterized as the most densely populated region since population density is at 21.9 people per square km whereas it is 6.0 in the entire Kazakhstan. For comparative purposes, highest density is in the South, the second densely populated region is Almaty with 8.4 people per square

km and the least populated one is Aktobe where density stands at 2.6 (Demographic yearbook, 2011).

Majority of the Southern population is represented by rural inhabitants 60.75 % (Demographic yearbook, 2011), that is why the region is considered as the agrarian one. Rural population in South Kazakhstan is mostly comprised of the two ethnicities: Kazakhs and Uzbeks.

Unlike the population of Kazakhstan as a whole the population in the Southern part of the country was continuously growing even during the crisis of the 1990s in general and by both places of residence: urban and rural (fig. 19).

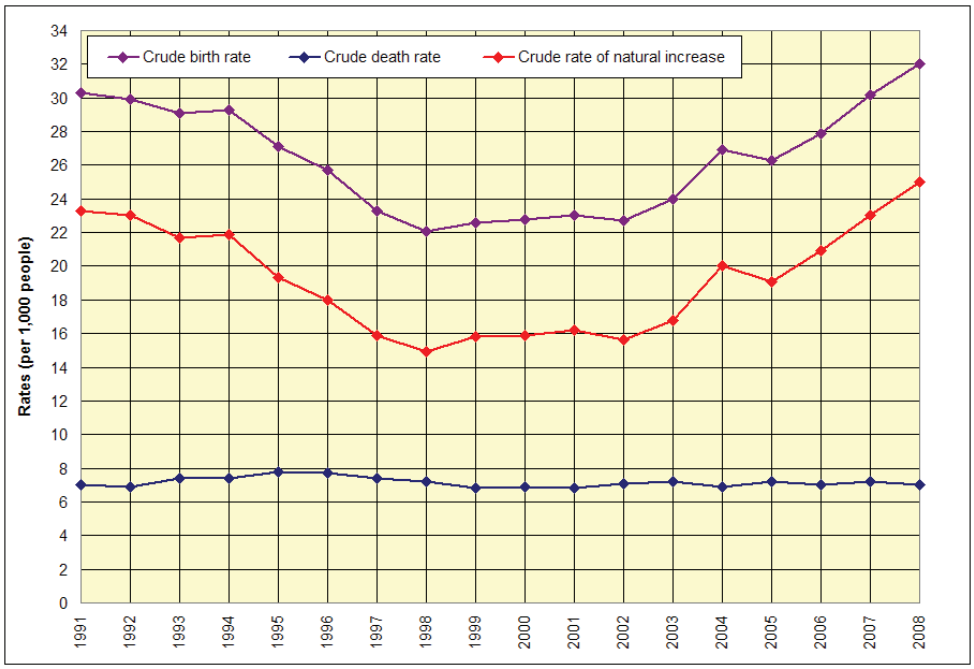
Fig. 19: Trends in total population growth in South Kazakhstan, by place of residence, 1991-2011



Source: Agency of Statistics of Kazakhstan

The population growth in the South is the result of the two factors: first of all, the natural increase since the crude birth rate rounded to 30.3 per 1,000 people (fig. 20) even in 1991 but then it decreased though increased again to 32.0 per 1,000 people (fig. 20) at the end of the 2000s during the time of economic stability. Such level of reproduction led to the growth of the population due to the mortality level that was relatively lower than in the entire Kazakhstan (8.2 per 1,000 people compared with 10.7 per 1,000). The crude death rate in South Kazakhstan during the 1990-2000s varied from 6.8 per 1,000 to 8.0 per 1,000 as mentioned above.

Fig. 20: Trends in crude rates of birth, death and natural increase in South Kazakhstan 1991-2008

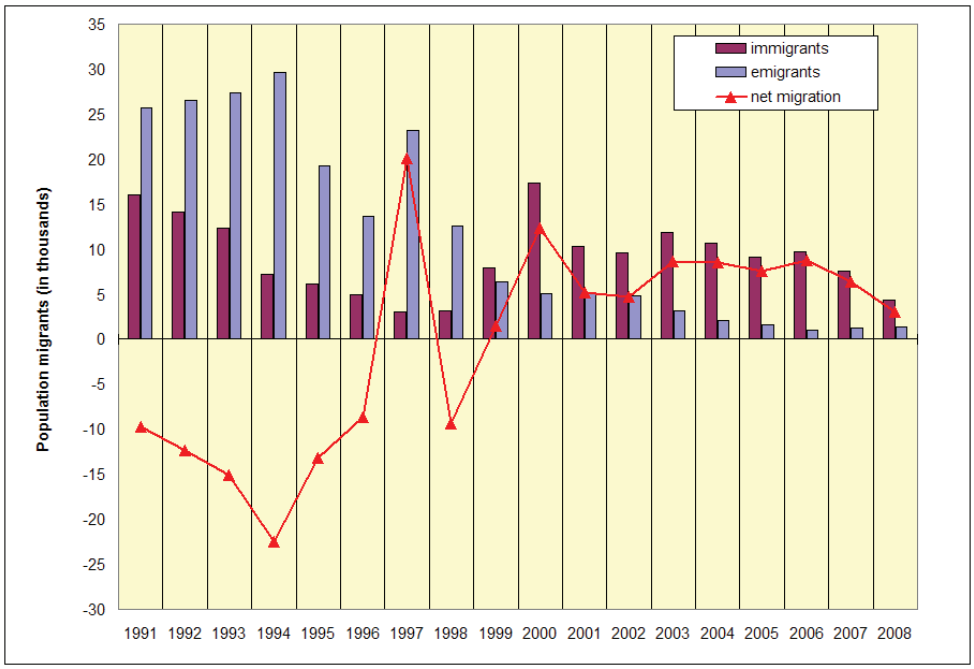


Source: Department of Statistics in South Kazakhstan

The second factor that influences population growth in South Kazakhstan is net migration that has occurred due to the inflow of workers from Uzbekistan. Furthermore, owing to its favorable climate South Kazakhstan has been attractive to majority of Oralmans.

Unlike Kazakhstan as a whole, South Kazakhstan recovered its positive net migration in 2000 (fig. 21) not in 2004. Besides in 1999 South Kazakhstan did not have a negative net migration as it was close to zero while in Kazakhstan as a whole net migration was negative in 2003 for the last time.

Fig. 21: Trends in migration in South Kazakhstan, 1991-2008



Source: the Department of Statistics in South Kazakhstan

With regards to the 1990s, those were the years of negative net migration that occurred due to the outflow of European population to their motherland as it happened in the entire Kazakhstan, even though it was not reflected on population decrease in the South.

Coming back to the specified factors, which have incited population growth in South Kazakhstan: the first factor of population increase is identified as the intensive growth of rural population based on, first of all, higher reproduction level in rural areas; secondly, it is based on lower mortality levels among rural population, as even in the crucial 1999 year the crude death rate in urban areas was 8.6 per 1,000 people, whereas in rural areas it was 5.7 per 1,000 people. Moreover, most of the first waves of Oralman migrants, especially from the autonomic Republic of Karakalpakstan in Uzbekistan, moved to rural areas of the South to be able to yield from farming.

The alarming and very important question in the South region remains to be the mortality since due to polluted districts not in all but in some areas, there are higher mortality rates caused by cardiovascular diseases (49.1 % of all deaths, 2006), accidents (11.7 % of all deaths, 2006) (Shaymanov, 2008) and especially infant and maternal mortality. As it was mentioned above, over the last twenty years the crude death rate has shifted from 6.8 per 1,000 people to 8.0 per 1,000 people. From the first look it does not seem so dramatic but the main and important issues are the maternal and infant mortality. Analyzing the level of maternal mortality per one hundred thousand live births (maternal mortality ratio) in the year of 1999 it should be noted that an indicator of 65.5 maternal deaths is incredibly high. By 2010 it decreased to 26.7 (Demographic yearbook, 2011) which is still not acceptable.

With the high reproduction in South Kazakhstan at present the mothers and infants are at a significant risk of death what requires the support of women and improvement of professional medical services. For comparative purpose the levels of maternal mortality in selected regions were specified for 2010: in Kazakhstan it was 22.7 maternal deaths per 100,000 live births, in West Kazakhstan it was 8.3, in Central part, Karagandy region in particular, it rounded to 4.2 and the highest maternal mortality was observed in the two problematic regions including the North and the East with 24.0 and 21.5 maternal deaths respectively. Due to this fact, Kazakhstan in general and its three regions, including South, North and East, display a considerable problem with regards to reproduction.

With reference to infant mortality, Kazakhstan is considered as a country with substantially high infant mortality rate including its South Region. In the South Region the intensity of infant mortality is based on the following reasons: relatively polluted district and, unfortunately, very poor medical care system and services. There is no detailed data on infant mortality rates but the infant mortality rates per one thousand births are already quite alarming where urgent measures are needed to improve the situation, otherwise the population loss will be accelerated even faster.

In order not to describe infant mortality rate by selected regions separately and Kazakhstan as a whole the small table is presented with observation of the three important years: 1999 as a year with a still existing crisis, 2005 as a year of comparable improvements of socio-economic conditions and 2010 when stability started to show the results.

Tab.10 Changes in the infant mortality rates by selected regions in 1999, 2005 and 2010 (per1,000 live births)

	1999	2005	2010
Kazakhstan	20.35	15.15	16.54
North Kazakhstan	19.49	15.06	13.81
East Kazakhstan	20.10	18.97	19.64
Central Kazakhstan	21.27	10.95	14.95
West Kazakhstan	19.90	15.03	13.87
South Kazakhstan	19.62	15.95	19.43

Source: Agency of Statistics of Kazakhstan

Kazakhstan in general has incredibly high levels of infant mortality that has been notified by demographers (Sherbakova, 2011). Even in times of economic stability starting from 2003 until today there has not been any substantial decrease. Moreover, some regions like the East and the South have demonstrated an increase due to many factors but mostly due to pollution and poor medical care system. Demographers (Dude, 2005) specified the reasons of increased infant mortality in Kazakhstan: emigration of educated and economically well-off Russian population, economic changes during the independence of Kazakhstan influenced by insufficient investment to infrastructure and medicine, and regional variation of maternal education in rural and urban areas.

The biggest change in the direction of decreasing number of infants' deaths has been observed in the Western and Northern parts of Kazakhstan, although it still remains comparably high. The

Kazakhstani demographers (Zhumatova and Lokshin, 2010) pointed out the main problems in the infant mortality levels: the pathology occurred during the perinatal period (47.1 %), congenital anomalies (20.0 %) and respiratory diseases (15.7 %).

South Kazakhstan was the most problematic since it had approximately the same levels in 1999 and 2010 and, besides, from 2005 infant mortality rate started to increase (tab. 10).

With regard to life expectancy at birth in South Kazakhstan, there is approximately a two year difference during the mentioned period: in 1999 the life expectancy at birth was 67.36 years; male rates were even lower at 63.39 while female rates were at 71.41 years. In 2010 the life expectancy has increased to 69.53 in overall, among males to 65.74, whereas among females it grew up to 73.45 years. (Demographic yearbook, 2011)

Demographically, South Kazakhstani population has been continuously growing even in the 1990s, mostly by virtue of significant fertility levels. The main problem of high maternal and infant mortality though still remains to be an issue in reproduction matters.

With purpose to express significance of fertility levels in South Kazakhstan the section of fertility dynamics in selected regions was initiated presenting in this sub-chapter.

6.1.1 Fertility dynamics in selected regions of Kazakhstan

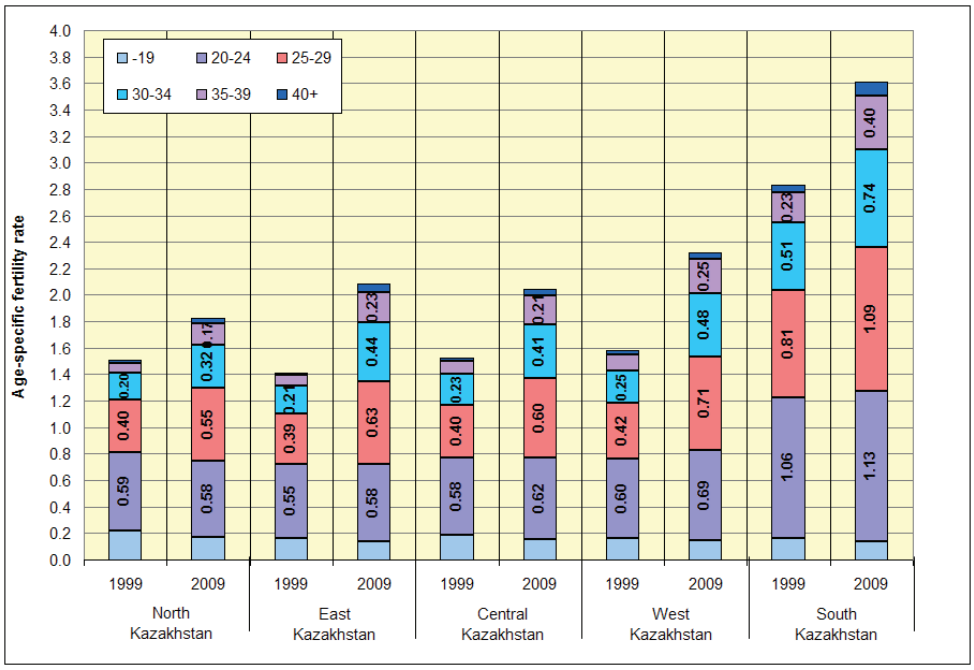
The fertility analysis of selected regions was aimed to understand reproductive differences by each region separately and with special attention to South Kazakhstan. For this purpose we have selected five regions from originally fourteen regions, geographically presenting area: North Kazakhstan, East Kazakhstan, West Kazakhstan as well as Karaganda region which in following section called as Central Kazakhstan, and the main focus of the research – South Kazakhstan.

Kazakhstan due to its history has considerable differences among the regions and the particular distinction takes place in the ethnical representativeness. It has happened historically that the Northern part of Kazakhstan has a majority of Slavic population proven by the census data of 2009 the Russians represented 48.25 %, whereas the Kazakhs constituted 35.89 % of the population. Approximately the same ethnical distribution took place in Central Kazakhstan, the Karagandy region where the Russian representation is 46.90 % and the Kazakhs population stands at 32.61 %. The rest of the analyzed regions (East, West, and South) had the prevailing Kazakh population, however in East Kazakhstan this difference was not to a great extent as the Kazakhs represented 55.01 % and the Russians 41.10 % of the population.

As determined by the demographer (Agadjanian, 1999) the ethnic factor has a significant influence on fertility developments. By this fact the reproductive behavior of selected regions may have differences not only in fertility level but in its intensity.

For comparative purposes, the years (1999 and 2009) used in the fertility analysis of the South and selected regions. The first view was related to the difference in total fertility rates. By the year of 1999 South Kazakhstan was the only region among selected ones where the total fertility rate was higher than the replacement level (fig. 22).

Fig. 22: Trends in the age-specific fertility rates among selected regions, 1999 and 2009



Note: Five year rates represent the sum of rates by unit of age

Source: Author's calculation based on data from the Agency of Statistics of Kazakhstan

During the 2000s the fertility level has increased in each selected region. Though, in North Kazakhstan this increase was not significant. As mentioned above, North Kazakhstan represents a highly populated region by the Russians who used to have families with one or two children on average.

The highest increase in the total fertility rate was observed among South Kazakhstani women with the difference of 0.77. This growth has occurred not only due to socio-economic developments in recent years but also as a result of the traditionally higher fertility level among South Kazakhstani women. However, it is obvious that the socio-economic growth has given the opportunity for women in South Kazakhstan to implement postponed third, fourth and even fifth births.

Regarding the age contribution to the fertility it is evident that the age groups of 20-24 covered the substantial part of the fertility but no considerable increase was observed among them as with the age groups of 25-29 and 30-34 years. The increase of the fertility among women at the age of 25-34 has clearly indicated the postponement of reproduction.

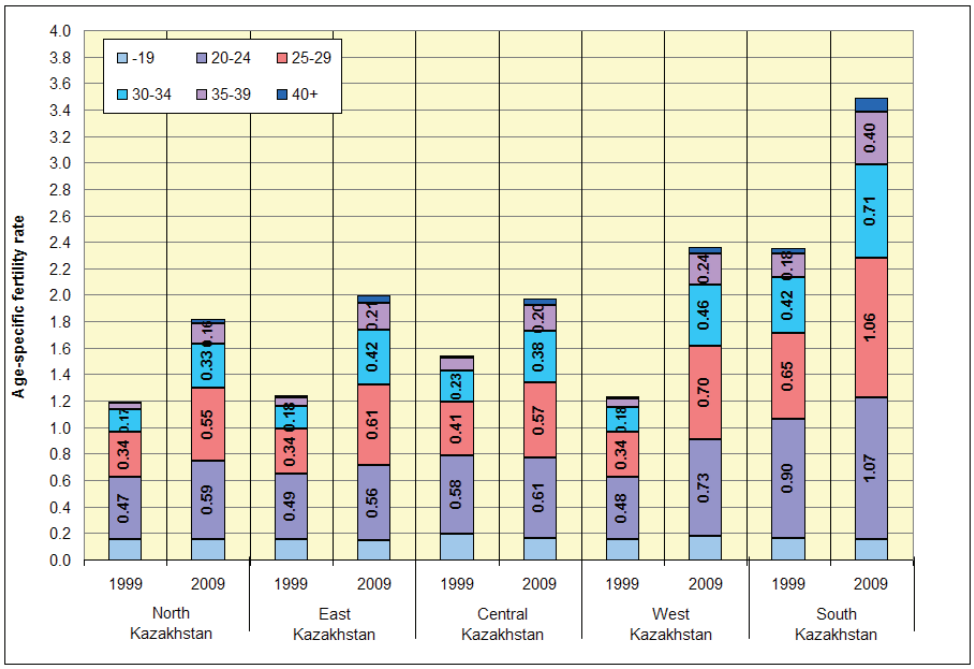
Differences across the regions and the place of residence have an important meaning. The total fertility rates in selected regions showed that South Kazakhstan is in a safe position since the TFR equals to 3.61 live births per woman (2009). West Kazakhstan has more or less acceptable TFR as it rounded to 2.32 live births per woman. The other three regions are at a relatively higher risk of population decrease since their TFR is lower than the replacement level.

The analysis by the place of residence has its importance due to the fact that fertility in urban areas is expected to be even lower than the general levels. However, it is not the case for South Kazakhstan.

Comparison of the fertility levels in urban areas among the regions has showed that in South and West Kazakhstan the fertility increase is significant (fig. 23) as the differences between observed years stand at 1.14 (South) and 1.12 (West). Both mentioned regions are relatively traditional and conservative due to a higher percentage of the Kazakh population.

With regards to the Central, East and North Regions, in urban areas the fertility level has not reached a simple replacement level as in those regions families with one or maximum two children is considered to be a standard today.

Fig. 23: Trends in the age-specific fertility rates among selected regions, urban, 1999 and 2009



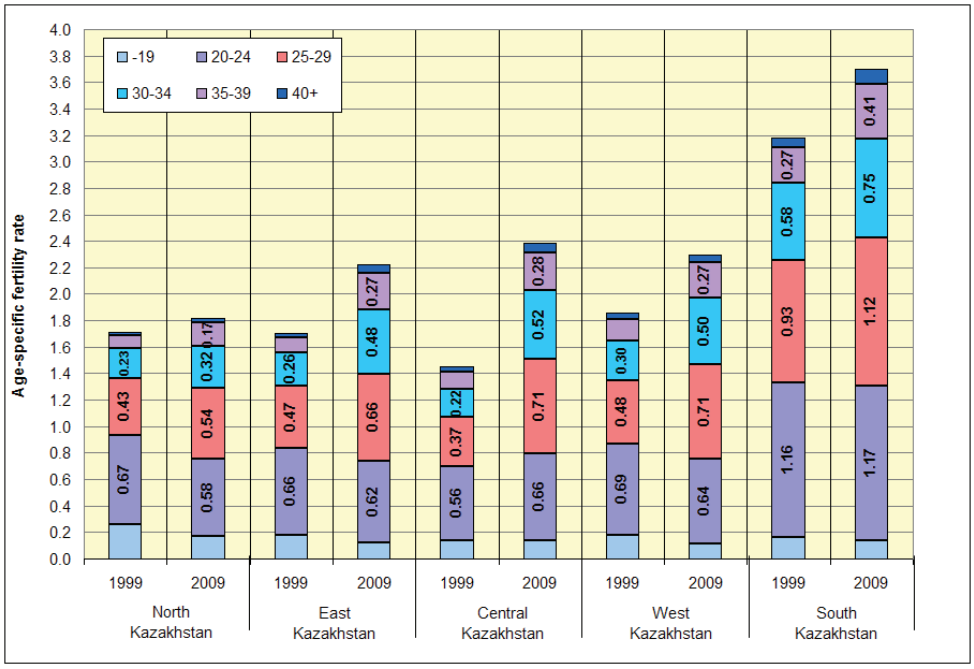
Note: Five year rates represent the sum of rates by unit of age

Source: Author's calculation based on data from the Agency of Statistics of Kazakhstan

The increase in age contribution has occurred among women at the age of 25 to 39 years to a considerable extent. The weight of fertility among the youngest women (15-19) is not significant which indicates the shifting of fertility to the older age.

Considering the fertility variation in the rural areas the situation was slightly better in comparison with urban fertility. In general, the increase in birth rates between 1999 and 2009 years is related to Karagandy Region in Central Kazakhstan. The difference in total fertility rate between the two analyzed years was 0.93 as the highest one, as in South Kazakhstan, for instance, the difference was at 0.50 (fig. 24).

Fig. 24: Trends in the age-specific fertility rates among selected regions, rural, 1999 and 2009



Note: Five year rates represent the sum of rates by unit of age

Source: Author's calculation based on data from the Agency of Statistics of Kazakhstan

Despite the fact that rural total fertility rates increased in every region, the contribution of the first two age groups (15-19 and 20-24 years) showed an apparent decrease in three regions including North, East and West Kazakhstan. With regard to South Kazakhstan the first and second age groups did not show any rise or decline. This fact indicates that even young women from rural areas have changed their reproductive behavior.

Analysis of the fertility by the geographically selected regions showed that it increased in every selected region during the years of economical growth. In spite of this the three regions (North, East and Central part) had very lower fertility levels below 2.1 children.

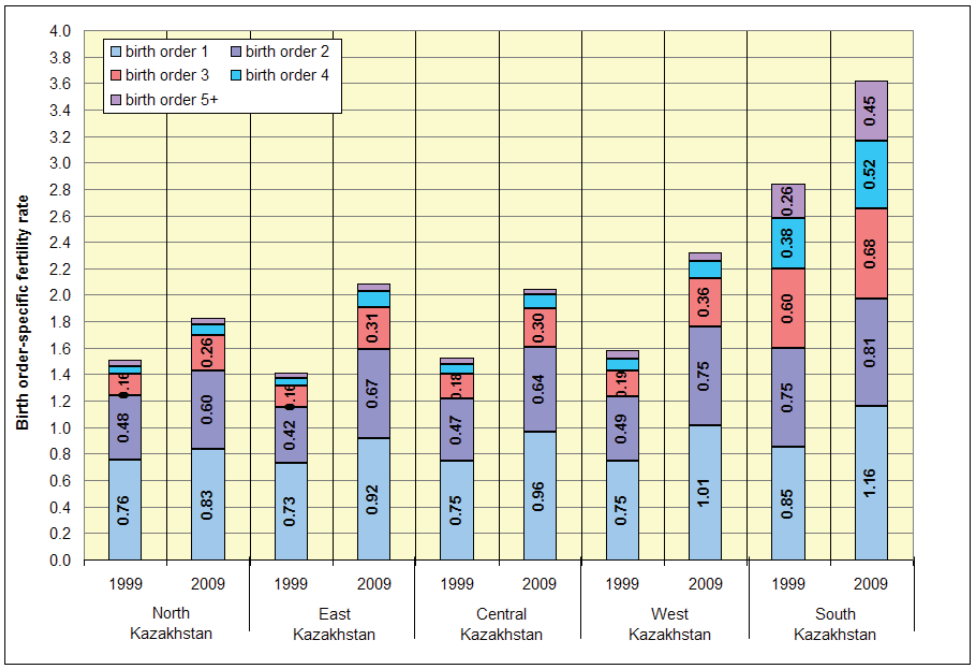
According to reproductive behavior, West Kazakhstan seems to be close to the South, but the fertility weight of South Kazakhstan remains to be the major one.

The regional variation occurred by the family size as well. During the Soviet times the standard family used to have three children on average, though in South Kazakhstan this average was related to four children. Meanwhile, in the North Region families frequently had two children or even one. Accordingly, the birth order-specific fertility rates have an important issue which needs to be analyzed.

Considering that the 2000s were related to the years of recuperative fertility the question is to what extent it has recovered particularly in South Kazakhstan and in comparison with selected regions.

The increase in the fertility by birth order is related to the first, second and third child orders in all the observed regions. With regard to South Kazakhstan, the increase is inherent to the fourth and fifth child as well (fig. 25).

Fig. 25: Trends in the birth order-specific and total fertility rates among selected regions, 1999 and 2009



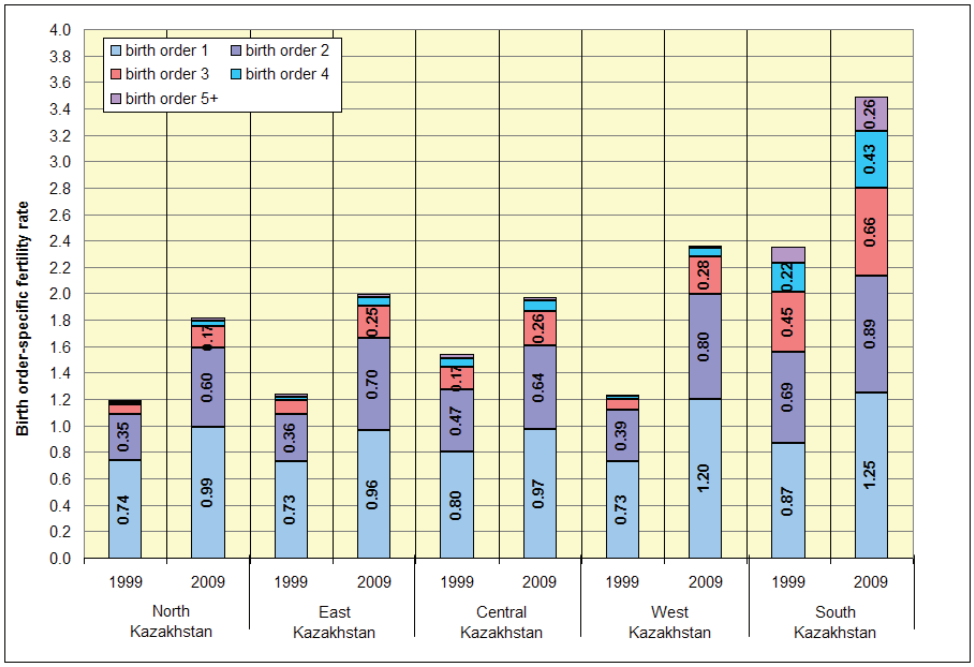
Note: Rates of the second kind

Source: Author's calculation based on data from the Agency of Statistics of Kazakhstan

Nevertheless, the substantial fertility weight belongs to the first and second births. In respect of the fertility by the birth order the difference occurred by the place of residence. Since the cost of having a child significantly differs between urban and rural areas, the urban parents are under the conditions where they have to be more careful in planning the number of children. The difficulties in bringing up the children start with the decision of who will leave the job in order to look after the child as well as with the shortage of places in kindergartens in urban areas. By contrast, in the rural areas some questions such as kindergarten can be escaped and children mostly grow altogether when parents, relatives or even neighbors look after them.

It can be seen from figure 26 that in urban areas most of the births take place within the first and second child while the number of births among the higher orders is insignificant. However, the slight increase in the number of the third children occurred in every region in recent years.

Fig. 26: Trends in the birth order-specific and total fertility rates among selected regions, urban, 1999 and 2009



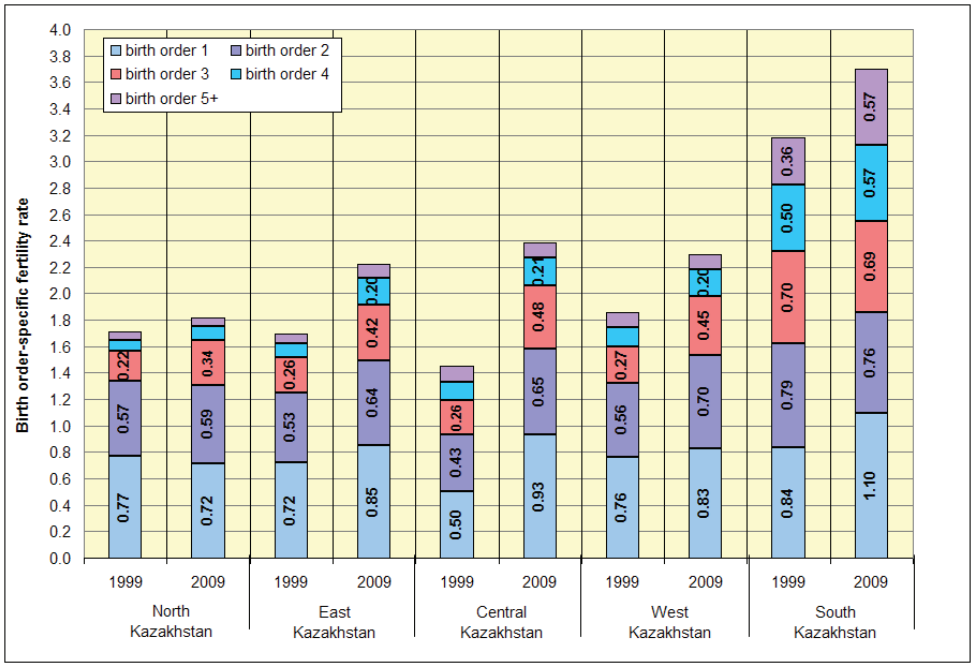
Note: Rates of the second kind

Source: Author's calculation based on data from the Agency of Statistics of Kazakhstan

South Kazakhstan is the only region where the value of the fourth child birth has been substantially higher than the value of the third child in other selected regions. Since South Kazakhstan remains to be a traditional region, there still remains a frequent practice when grandparents or in-laws look after the children.

The difference between South Kazakhstan and the selected regions in family size also took place in rural areas. As mentioned above, the cost of having a child in rural area is relatively cheaper than in urban. Moreover, women are less aware of modern contraceptives, though, the most important factors include traditional way of life and public opinion. Those reasons determine the fertility level in rural areas especially with higher order children (fig. 27).

Fig. 27: Trends in the birth order-specific and total fertility rates among selected regions, rural, 1999 and 2009



Note: Rates of the second kind

Source: Author's calculation based on data from the Agency of Statistics of Kazakhstan

Urban-rural comparison showed that among selected regions (except the South) the increase of third rural child occurred approximately with 0.20 points in 2009. In South Kazakhstan the value of the third order child from rural area did not show any increase. Yet, the value of the fourth and fifth order children rose significantly in the rural South.

It can be concluded that the selected regions need to support fertility to a considerable extent in rural areas (due to increase of third birth in every region, except South) as potentially women there still maintain a higher reproduction level. As for urban women, it seems that reproductive behavior has already changed in the direction of the modern one, though; properly organized conditions for parents are still required.

The differences in the mean age at childbearing showed that the youngest mothers of the first child were found among the women in North Kazakhstan (22.71 years of age) (tab. 11). This fact is not surprising since in the North Region the majority of the populations are the Russians among whom women get married earlier (Agadjanian, 1999).

Generally the mean age at childbearing has increased in every analyzed region (tab. 11). However the highest increase has taken place in East Kazakhstan with the difference of 2.32 years and the lowest in South Kazakhstan with 1.19 years. Those changes have clearly pointed out that in South Kazakhstan the fertility ageing is progressing slower compared to other regions. Since the modernization process happened significantly faster in so called northern regions (located above the South), the reproductive behavior of those women changed sooner. South Kazakhstani people, due

to traditionalism, accept innovations with some suspicion and very slowly because public opinion disapproves modernized behavior.

Tab.11 Mean age at childbearing according to birth order in selected regions, in 1999, 2005 and 2010

	North Kazakhstan	East Kazakhstan	Central Kazakhstan	West Kazakhstan	South Kazakhstan
			1999		
Total	25.47	25.88	26.05	26.41	26.99
1st order	22.71	23.22	23.10	23.25	23.47
2nd order	26.51	26.96	27.00	27.04	25.46
3rd order	30.03	30.14	30.33	30.51	28.33
4th order	32.16	32.58	32.75	32.85	31.24
5th and over	35.36	35.12	35.41	36.21	35.03
			2005		
Total	26.67	27.61	27.26	27.47	27.80
1st order	23.57	24.32	24.06	24.12	24.05
2nd order	27.98	28.72	28.32	28.38	26.01
3rd order	31.33	32.32	31.98	31.91	29.22
4th order	33.31	34.34	33.64	33.82	31.83
5th and over	35.27	36.36	35.71	36.06	34.86
			2010		
Total	27.18	28.20	27.85	28.11	28.18
1st order	24.02	24.75	24.78	24.64	24.86
2nd order	28.11	28.69	28.52	28.40	26.05
3rd order	31.82	32.29	31.88	32.25	29.05
4th order	33.44	33.85	33.87	34.15	31.72
5th and over	35.27	36.11	36.25	36.28	34.93

Source: Author's calculation based on data from the Agency of Statistics of Kazakhstan

The fertility analysis was measured through the total fertility rates and the mean age at childbearing in the selected regions. This analysis showed the differences in fertility development according to geographical, historical and ethnical belongings. In North, East and Central Kazakhstan the fertility development corresponds to the reproductive behavior of the European group of population (the Russians, Ukrainians and Germans). In West and South Kazakhstan the reproductive behavior of women is more traditional since both regions are highly populated by the Kazakhs.

Regional differences in fertility developments were proven by the proportion of childless women due to the probability to have the first child during the researched period (tab.12).

Tab. 12 Parity progression ratios according to selected regions, in 1999, 2005, 2010 (in %)

	North Kazakhstan	East Kazakhstan	Central Kazakhstan	West Kazakhstan	South Kazakhstan
		1999			
Proportion of childless women	24.33	27.20	25.03	25.00	14.39
0→1	75.67	72.80	74.97	75.00	85.61
1→2	63.97	58.13	62.61	64.83	87.95
2→3	33.94	38.70	39.40	38.93	79.83
3→4	34.27	36.38	39.05	48.39	63.44
		2005			
Proportion of childless women	21.15	20.30	14.78	12.84	1.95
0→1	78.85	79.70	85.22	87.16	98.05
1→2	72.50	69.21	67.38	77.29	79.07
2→3	35.90	44.40	42.79	42.63	85.23
3→4	34.39	32.07	35.71	34.64	72.56
		2010			
Proportion of childless women	11.85	16.39	7.33	2.59	-19.93
0→1	88.15	83.61	92.67	97.41	119.93
1→2	73.91	80.72	70.53	80.42	65.36
2→3	42.39	48.86	47.31	48.97	86.03
3→4	32.81	38.73	37.39	38.88	75.70

Source: Author's calculation based on data from the Agency of Statistics of Kazakhstan

The high risk as a result of low fertility at the first birth occurred in East Kazakhstan since the proportion of childless women in 1999 was 27.20 % and after eleven years it has decreased but remains relatively high at 16.39 %. In South Kazakhstan the number of live births of the first child increased significantly so that in the year of 2010 it has exposed the absence of childless women. Such a result is considered to be extraordinary either because of the number of births among 21-24 year old women since the majority of them covered the first birth or due to the inaccuracy in the statistical data.

The comparative analysis of the South and selected regions has determined the substantial contribution of reproduction and fertility weight of South Kazakhstan in the country.

6.2 Fertility development in South Kazakhstan

In the preceding sub-chapter the fertility development of South Kazakhstan has been presented in comparison with specifically selected regions. This fertility analysis was aimed to identify reproductive behavior of South Kazakhstani females in the context of reproduction and in comparison with other regions.

The research was mainly based on reproductive behavior and its patterns in South Kazakhstan. Thereafter, the detailed analysis of fertility development in South Kazakhstan is required. As mentioned above, South Kazakhstan represents the traditional region with a relatively high fertility level. Higher fertility level in the region has been historically kept by the Kazakh women. Even in the entire country the total fertility rate among the Kazakh women was 7.4 children at the end of the 1950s (Aubakirova, 2005). In South Kazakhstan families with 8-9 children occurred frequently among generations born before WWII. The Kazakh women born in the 1950s were the first ones who started to change their reproductive behavior in the direction of reducing fertility.

Those facts identify the interest to analyze how reproductive behavior has changed among youth today. Is there a considerable influence from elderly generations to their off-springs?

Using statistical data available from 1999 year we intend to analyze fertility changes in the last ten years. According to the number of live births the fertility level has been growing continuously in the 2000s (tab. 13). With increasing fertility the number of still births has been growing simultaneously. The increase in live and still births between the years of 2007 and 2008 is related to changing definitions of births that have been explained in sub-chapter 5.3 (Fertility development in Kazakhstan). The general increase of live births during the analyzed decade corresponds to economic changes and as a result of compensative fertility. With regard to still births, the rise has happened as the effect of ecology, poor medical care, maternal education and reproductive health.

Changes have occurred in the increasing number of extramarital births due to modernized reproductive behavior, though, even in the 1970s it was shameful and prohibited.

Regarding the number of children by birth order there have been an increase in every order. The highest increase has been determined in the first, fourth and over births what can be covered by the two waves. The first birth order corresponds to fertility implementation among females born in the 1980s, the so called generation of “baby boom”. During the Soviet period the last highest fertility occurred in the 1980s. In the beginning of the 1990s fertility declined rapidly.

Tab.13 Number of births by vitality, mother's marital status and child's birth order in South Kazakhstan

	1999	2000	2001	2002	2003	2004	2005
Live births	45,439	46,316	47,406	47,476	51,051	57,808	57,733
Still births	351	347	388	402	375	415	460
Total births	45,790	46,663	47,794	47,878	51,426	58,223	58,193
Marital status	of mother						
single	3,402	-	-	5,018	5,406	5,840	5,808
married	37,517	-	-	38,790	43,491	46,067	45,971
cohabitation	4,520	-	-	3,668	4,517	5,901	5,954
Birth order							
1st order	14,599	-	-	15,421	18,663	19,333	19,552
2nd order	12,313	-	-	11,754	13,077	14,135	14,394
3rd order	9,292	-	-	9,670	10,181	11,570	11,267
4th and over	9,235	-	-	10,631	11,493	12,770	12,520

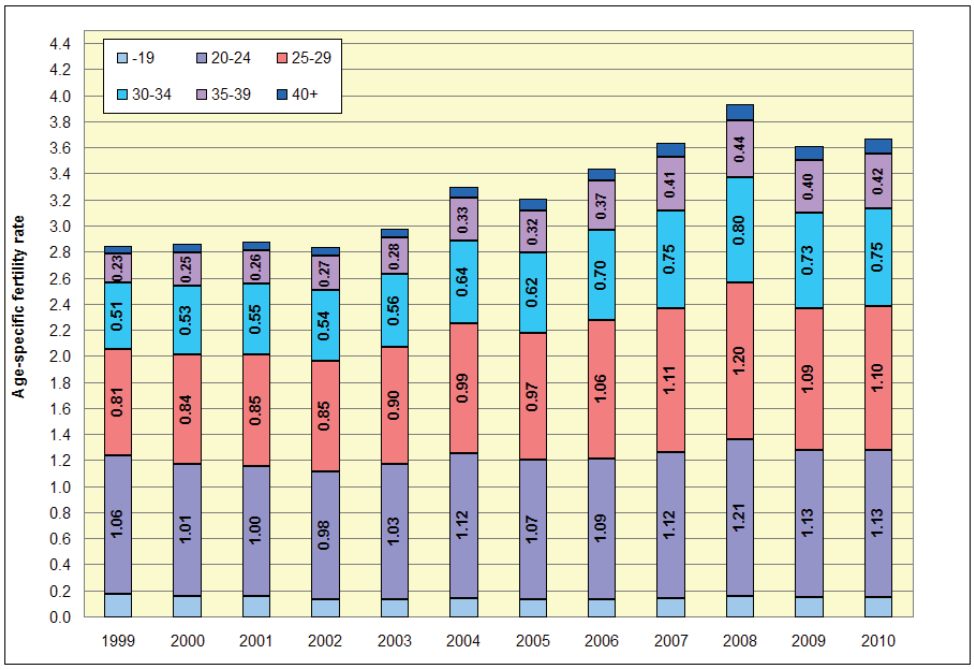
	2006	2007	2008	2009	2010	2010-1999
Live births	63,028	68,287	75,449	72,587	76,792	31,353
Still births	505	528	772	805	813	462
Total births	63,533	68,815	76,221	73,392	77,605	31,815
Marital status	of mother					
single	5,353	5,489	7,220	6,852	7,614	4,212
married	50,906	56,270	62,383	60,504	63,831	26,314
cohabitation	6,769	6,528	5,846	5,231	5,347	827
Birth order						
1st order	20,201	22,090	26,031	25,612	27,674	13,075
2nd order	15,857	16,332	17,563	17,232	17,477	5,164
3rd order	12,565	13,287	14,041	13,094	13,541	4,249
4th and over	14,405	16,578	17,814	16,649	18,100	8,865

Note: extramarital births is a sum of births of single mothers and those living in cohabitation
Source: Agency of Statistics of Kazakhstan

Since the rigorous analysis of fertility development in South Kazakhstan was presented above in comparison with other regions the fertility analysis of only South Kazakhstan is based on ethnical differences and marital status of a mother.

Nevertheless, let us make a brief review of the fertility development in South Kazakhstan. During the 1999-2010 the total fertility rate increased in general, the highest fertility level occurred in 2008 when TFR reached 3.93 live births per woman. In 2009 fertility level decreased to 3.61 live births per woman and this decline can be noticed through the number of births (tab. 13). The number of births showed a significant increase in 2010, but the total fertility rate was 3.67 live births per woman (fig. 28). Those changes might be the first notes that indicate completion stages of compensative fertility.

Fig. 28: Trends in the age-specific fertility rates in South Kazakhstan, 1999-2010



Note: Five year rates represent the sum of rates by unit of age

Source: Author's calculation based on data from the Agency of Statistics of Kazakhstan

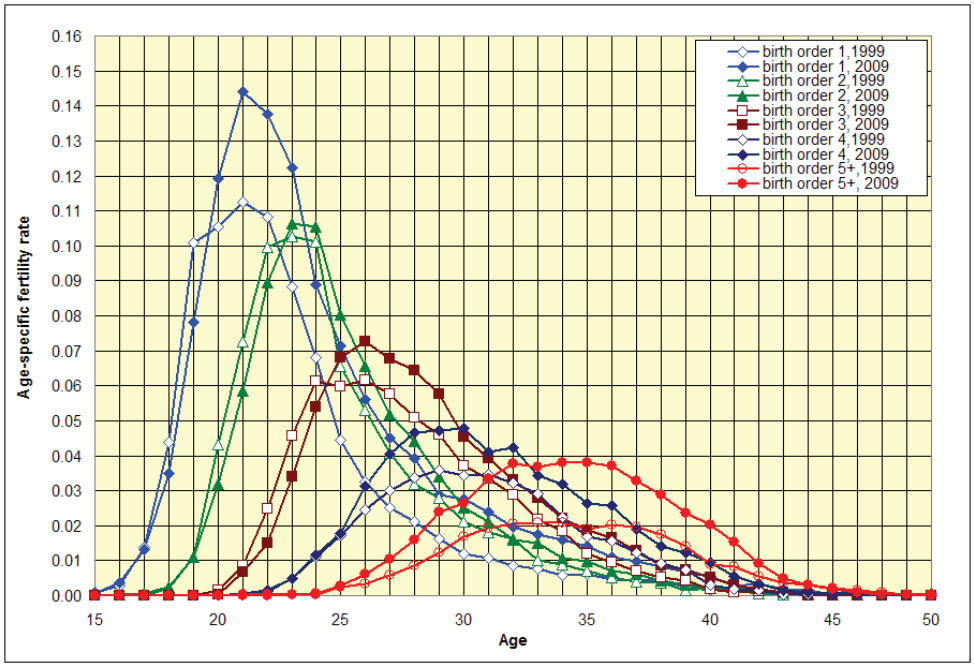
The age contribution of a mother has been mentioned in the comparative analysis (South Kazakhstan and selected regions) stating that even if the considerable part of fertility weight was related to women at the age of 20-29, in the South the reproductive significance occurred among 30-39 years old women as well.

Quick observation of urban-rural differences in fertility showed that in urban area of South Kazakhstan the total fertility rate increased to a greater extent compared to rural (fig. 23 and 24). Besides, in the highly reproductive year of 2008 the urban total fertility rate (3.98) was relatively higher than rural (3.57). In 2009 and 2010 the urban fertility level decreased (3.49 in 2009; 3.27 in 2010) as it did in the whole region. Meanwhile, the rural total fertility level kept growing slowly (3.70 in 2009; 3.97 in 2010).

The differences in the birth order fertility of the South were presented in comparison with selected regions. The analysis has shown that the significant increase occurred in the first, fourth, fifth and over children. The birth order fertility specification by the place of residence showed that the highest increase in urban area is related to the first births and in rural area it corresponds to the first, fifth and over children.

Previous analysis by the birth order fertility changes in age was aimed to compare South fertility development in respect of the observed regions. Considering that we have decided to estimate changes in the age by the birth order fertility between 1999 and 2009 within only the researched region (fig. 29).

Fig. 29: Changes in the age and birth order specific fertility rates in South Kazakhstan, between 1999 and 2009



Note: computed from age and birth order specific rates of the second kind

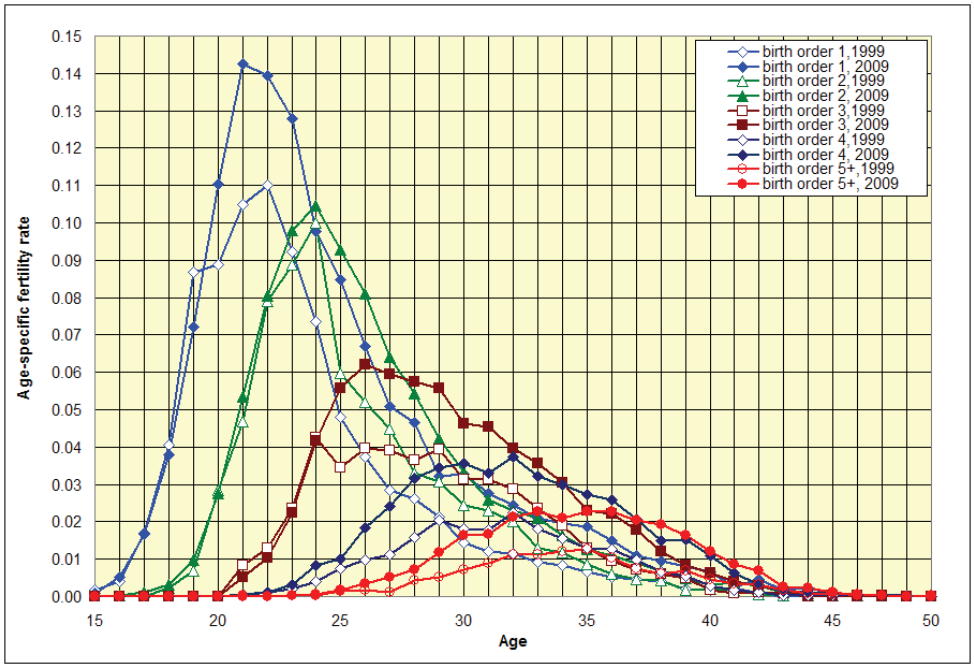
Source: Author's calculation based on data from the Agency of Statistics of Kazakhstan

The comparison of the birth order fertility showed the increase in every order, except for the second one. These changes have its logic since the second child is considered as an "intermediate" child in South Kazakhstan. Practically the birth of the second child occurs soon after the first within a one year difference.

Regarding the shifting in the age it has not happened to a considerable extent, though, among the third order children the highest intensity of the mother's age occurred at 26 years in 2009 not at 24 as it happened in 1999.

Brief review of the differences in the birth order fertility by the place of residence has showed the substantial increase of the first and third order urban children (fig. 30). With respect to the rural birth order fertility development, the intensity in the fifth order children has showed a significant effect (fig. 31) as derived from the comparison with selected regions analysis.

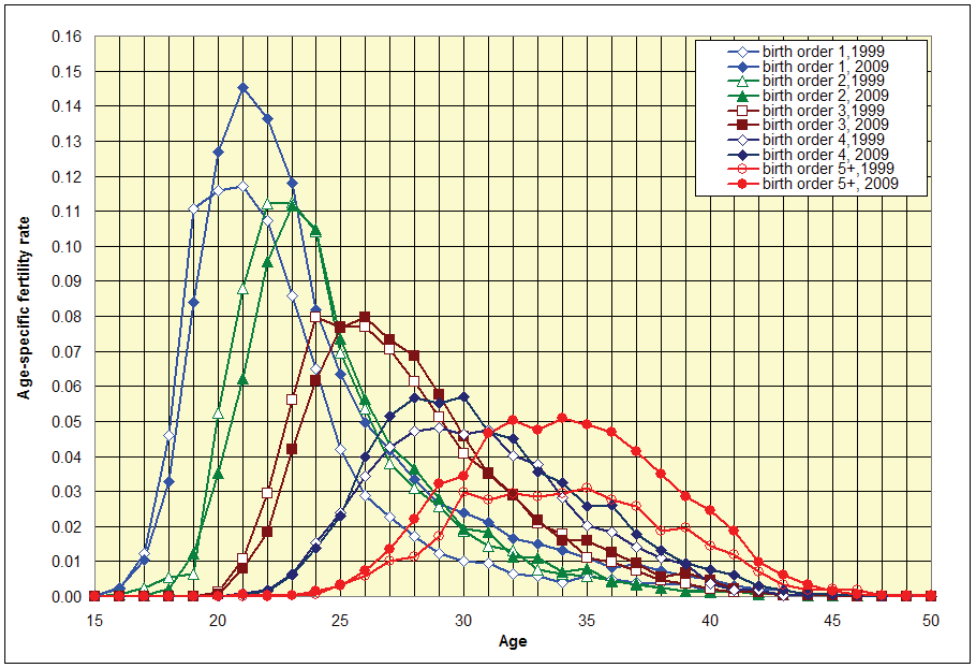
Fig. 30: Changes in the age and birth order specific fertility rates in urban South Kazakhstan, between 1999 and 2009



Note: computed from age and birth order specific rates of the second kind

Source: Author's calculation based on data from the Agency of Statistics of Kazakhstan

Fig. 31: Changes in the age and birth order specific fertility rates in rural South Kazakhstan, between 1999 and 2009



Note: computed from age and birth order specific rates of the second kind

Source: Author's calculation based on data from the Agency of Statistics of Kazakhstan

Birth order fertility analysis within South Kazakhstan identified the effect of reproduction according to the number of children. The result shows that fertility in rural areas remains traditional, but it is not the case with urban women.

The shift in the age of a mother has determined the fertility ageing since there was a one year increase in almost every birth order (tab. 11), except for the fourth and fifth births. The total increase in the mean age at childbearing presented two years difference, which specifies that women, nowadays, give birth later than they used to even ten years ago.

Considering the results of the research it can be concluded that the reproductive behavior in South Kazakhstan is changing due to the demographic transition stages, though, people's lifestyle decelerates the process.

6.2.1 Ethnic differences in fertility

The analysis of the fertility by ethnic differences is significantly important because of the divergence in lifestyle and cultural dissimilarities that influence reproductive behavior of ethnicities (Agadjanian, 2008). It has already been mentioned that Turkic group of ethnicities have large families in contrast to European group. The ethnic fertility evaluation in South Kazakhstan requires special attention since the majority of the people living there represent Turkic ethnic group, therefore, there arises an interest whether it influences the European group.

The representativeness of ethnicities in South Kazakhstan is different compared to the entire country. Unlike in Kazakhstan as a whole, in the South part of the country the Uighur ethnicity was not presented since the amount of them rounds to 0.16 %. On the other hand, two ethnic groups were added to the analysis of the fertility in the South: the Azerbaijanis and Koreans. The Azerbaijanis occupied the fourth place among ethnicities after the Russians. The Koreans (0.49 %) represent higher percentage of the population Ukrainians (0.30 %) and Germans (0.27 %).

Classification of ethnicities has the same structure as in the ethnic fertility analysis of Kazakhstan. Specifying two ethnic groups (Turkic and European) with a considerably different reproductive behavior it was divided to: 1) Turkic ethnic group consisting of the Kazakhs, Uzbeks, Azerbaijanis and Tatars; 2) European ethnic group represented by the Russians, Ukrainians, Germans and Koreans. Since the Korean people who live in South Kazakhstan are mostly Christians and have Slavic lifestyle we have added them to the European ethnic group.

The total fertility rates of Turkic and European groups have increased during 2002 to 2008 in each ethnicity (tab. 14). This indicator shows that Turkic ethnic group maintains higher birth rates, except for the Tatars. Families of the European ethnic group origin prefer one or two children.

Tab.14 Total fertility rates according to ethnicity in South Kazakhstan, 2002-2008

	2002	2003	2004	2005	2006	2007	2008
Kazakhs	2.99	3.07	3.48	3.39	3.68	3.84	4.18
Russians	1.26	1.36	1.47	1.44	1.49	1.60	1.65
Ukrainians	1.70	1.72	1.74	1.86	2.04	2.38	2.16
Uzbeks	2.98	3.31	3.44	3.34	3.44	3.66	4.01
Azerbaijanis	2.99	3.44	3.23	3.44	3.39	3.84	4.07
Tatars	1.37	1.59	1.64	1.69	1.50	1.92	1.84
Germans	1.92	1.70	1.96	1.75	2.17	2.12	2.76
Koreans	1.50	1.56	1.81	1.87	2.02	1.87	2.04
Total	2.84	2.98	3.29	3.21	3.43	3.63	3.93

Source: Author's calculation based on data from the Department of Statistics in South Kazakhstan

Trends of the total fertility rates by ethnicity showed that the highest increase with the difference of 1.19 between the years of 2002 and 2008 was related to the Kazakh females. The lowest increase (0.39) in the total fertility rate appertained to the Russians.

Substantial contribution towards the reproduction in South Kazakhstan is made by the Kazakhs, Uzbeks and Azerbaijanis whose fertility levels are higher than the total one. Among that group only the Tatars have a slight increase (0.47) and, besides, their fertility level has not reached even the simple replacement. The Tatars used to live among the Russians and most of them migrated to Kazakhstan from Russia. Today the majority of the Tatars live in urban area what determines their reproductive behavior. In contrast, the Kazakhs, Uzbeks and Azerbaijanis for the most part are settled in rural areas of South Kazakhstan. Furthermore, their reproductive behavior is identified by cultural background and powerful ties among the relatives.

Among the European ethnic group the highest fertility increase (0.84) is related to the reproductive behavior of German women. German females in South Kazakhstan used to have three children on average and in rare cases even four children during the Soviet times. In the 1990s South Kazakhstan has lost a significant part of the German population due to disintegration of the USSR, new reforms in a country and as a result of emigration. The Germans left in the region most likely, same as other females, revived their fertility in the 2000s or that kind of total fertility rate is related to small statistical numbers (94 total live births in 2008 among German women).

The fertility increase among the Ukrainians and Koreans is relatively the same. Both ethnicities are used to live in their community unlike the Russians. The Russians prefer independent way of living in the researched region. By virtue of that fact, families with one child are very popular since they rely on their own. The Ukrainians and Koreans maintain family ties and frequently have two children on average.

The obtained result of the total fertility rates has showed that the main reproduction increase was based on the fertility of the Turkic group.

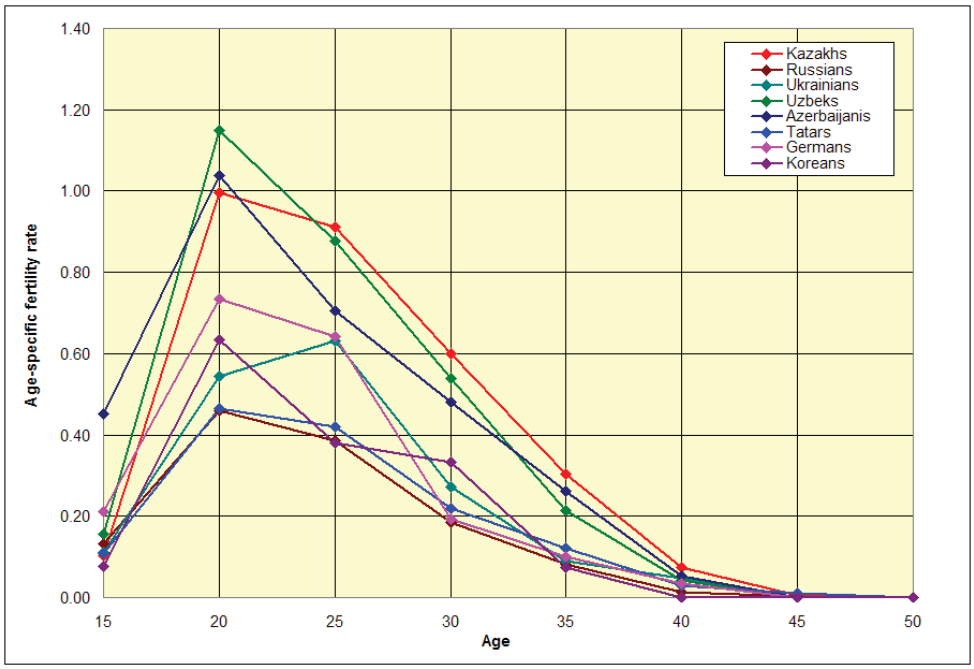
Changes in the fertility quantum by age are presented in five-year groups since the data on the number of females by ethnicity was ranged in such a way at the Department of Statistics in South

Kazakhstan. When comparing the intensity of fertility at the youngest age the highest level occurred among Azerbaijani women as they tend to marry and give births earlier (fig. 32). They maintain relatively higher intensity till the older ages. The Kazakhs and Uzbeks have resembling reproductive behavior but they start reproduction slightly later. Only the Tatars in the Turkic group have the fertility intensity similar to the Russians' one (fig. 32).

As for the European group, their high fertility takes place at the age of 20-25 and then it declines. Females from the European group try to finish their reproduction mostly before they turn 30. Nowadays, this group of females do not have more than two children, although, the marriage still takes place earlier at the age of 20-23 years.

Besides, the rapid decline in the fertility intensity among Korean females occurred after the age of twenty. During the Soviet period, and even today, Korean females have earlier marriages in comparison with the Turkic group and to some extent compared to the rest of the ethnicities in the European group as well.

Fig. 32: Age-specific fertility rates according to ethnicity in the South Kazakhstan, 2002

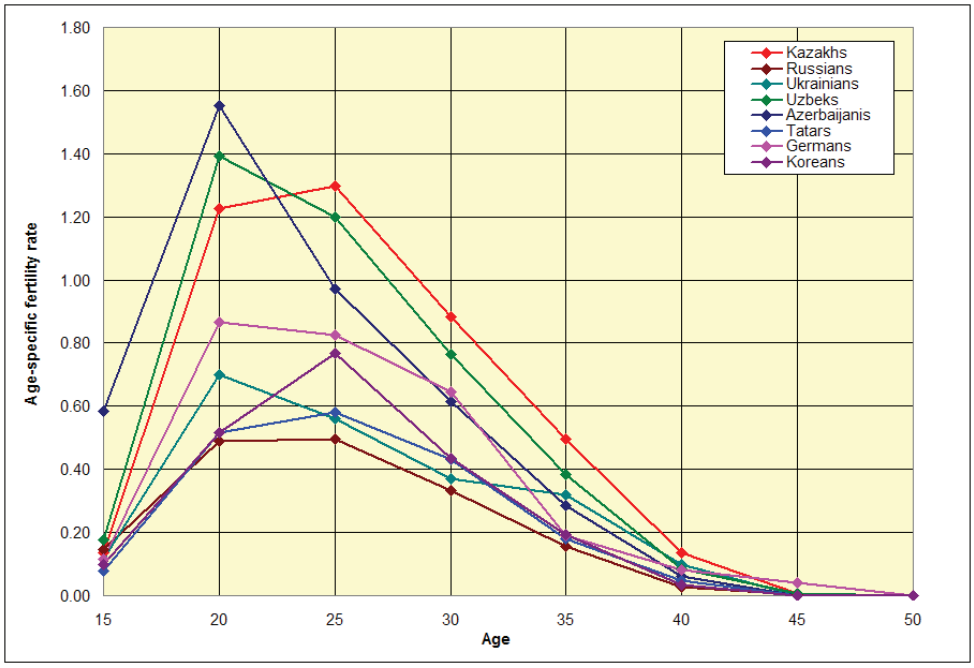


Source: Author's calculation based on data from the Department of Statistics in South Kazakhstan

During the six years between 2002 and 2008 the reproductive situation in respect to the fertility intensity by age has changed in every ethnicity (fig. 33). Due to the fertility increase the intensity of age rose as well. An interesting fact is that among the Kazakhs the highest intensity shifted from the age of 20 to 25 what concerns the fertility ageing (fig. 33). Other Turkic ethnicities, except for the Tatars maintained that intensity at the age of 20 years. The Tatars showed the direction towards the fertility ageing as well as the Kazakhs (fig. 33).

Among the European group the explicit increase in the fertility quantum was observed among Korean women. The highest intensity in 2008 was related to 25 year old mothers in contrast to 20 year old in 2002. The fertility ageing has slightly affected the Russians since in 2002 the highest fertility belonged to the women at the age of 20 and after six years the level of intensity remained higher between 20 and 25 years old women. The Ukrainian and German females did not show any shift in their fertility towards ageing and, moreover, the Ukrainian women showed the highest intensity at a younger age of 20 years in 2008 in comparison with 2002 when it was at the age of 25.

Fig. 33: Age-specific fertility rates according to ethnicity in the South Kazakhstan, 2008



Source: Author's calculation based on data from the Department of Statistics in South Kazakhstan

It is important to observe the variability of the mean age at childbearing. From the changes in fertility quantum it has become evident that women from the Turkic group start their childbearing process later than those from the European one and at the same time continue their reproduction till older reproductive ages. Considering this fact the mean age at childbearing was analyzed in total as well as by birth order.

Since the data on the number of births by ethnicity is available only for the period of 2002 to 2008 years it has been decided to take the first and the last years to analyze the differences during the six year period. The total mean age at childbearing increased among every ethnicity (tab. 15), except for Azerbaijanis who showed a decrease (-0.36) at the average age of a mother. According to Azerbaijani culture, early marriage is mostly compulsory in their society what can be observed from the mean age at first childbearing in comparison with other ethnicities.

The highest increase in the total mean age at childbearing was noted among the German women with the difference of 2.30 (tab. 15). This fact is related to the fertility postponement and to some extent to the low number of occurrence as mentioned above.

The average age of a mother among the Russians, Ukrainians, Koreans and Tatars has approximately increased by one or one and a half years (tab. 15) as a result of the fertility postponement among all the females from the 1990s to the mid of the 2000s.

A slight shift in the mean age at childbearing was observed among the Uzbeks (0.68) and Kazakhs (0.55) because of the traditional reproductive behavior it was not upward sharply.

Tab. 15 Mean age at childbearing according to child's birth order and by ethnicity, in South Kazakhstan, 2002 and 2008

	Kazakhs	Russians	Ukrainians	Uzbeks	Azerbaijanis	Tatars	Germans	Koreans
				2002				
Total	27.92	26.23	26.97	26.90	26.20	27.12	25.8	26.49
1st order	24.24	24.20	25.12	23.14	22.34	24.95	22.4	24.47
2nd order	25.83	27.31	27.05	24.89	24.41	27.18	27.0	27.79
3rd order	28.95	31.37	33.32	28.40	28.62	31.19	29.9	29.10
4th order	31.55	32.22	28.85	31.35	31.79	32.73	37.7	32.67
5th and over	35.10	35.45	31.95	34.82	34.40	39.22	-	37.50
				2008				
Total	28.47	27.39	28.37	27.58	25.84	28.19	28.1	28.01
1st order	24.76	24.92	25.15	23.64	22.61	25.65	24.7	25.67
2nd order	26.32	28.49	29.47	25.30	24.07	28.50	31.0	29.16
3rd order	29.40	31.49	33.60	28.98	28.34	32.14	29.3	31.44
4th order	32.03	32.71	31.80	31.82	31.24	34.22	37.9	32.85
5th and over	35.04	33.89	34.62	34.65	34.65	38.62	32.8	37.50

Source: Author's calculation based on data from the Department of Statistics in South Kazakhstan

The mean age at first childbearing increased among all the selected ethnicities, however, the Germans and Koreans showed a significant rise towards the fertility ageing (tab. 15). Those two ethnicities are presented as a relative minority in South Kazakhstan and do not depend, at least to a considerable extent, on public opinion.

The phenomenal increase at the average age of a mother occurred in the second birth order among the German women with a four year difference (tab. 15). If the Turkic ethnic group postponed their higher birth order (third, fourth and fifth), the German women had the same experience with the second child.

With regards to the higher birth orders, such as the third, fourth and fifth, a significant increase occurred in the third one among the Korean women (2.34) what also determined the fertility ageing. Yet, we cannot totally rely on this shift since the third child is a rare occurrence and the absolute number of births is too small with only 25 cases (2008). The same situation has been noticed among

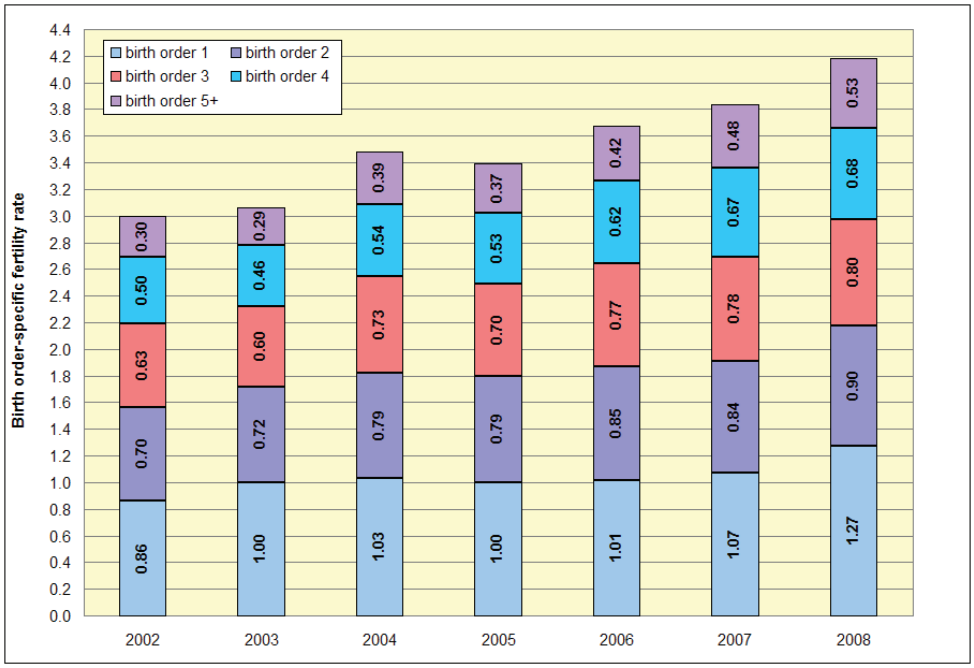
the Ukrainian women in their fourth and fifth birth orders with the number of only 5 birth cases presented in each order (2008).

The analysis of the mean age at childbearing in general and by the birth order showed that mother's age is rising as a result of a reduction in the reproductive period among all the ethnicities, except for the Azerbaijanis who did not show any increase in the mother's age.

There should be a specific attention towards the trends of the birth order-specific fertility rates by ethnicities with regards to the age of a mother at childbearing since it has been found that the third, fourth and fifth birth orders of the Turkic group of women correspond to their traditional reproduction. Meanwhile, it is not applicable to the European group. Nonetheless, the European group of women living in South Kazakhstan might get influenced by the society there which is worth analyzing to find out the extent of the impact.

The trends in the birth order-specific fertility rates are presented by the two specified groups starting with the Turkic one. The Kazakh women during the observed period showed a significant increase in the first births, but the number of higher birth orders has risen as well (fig. 34).

Fig. 34: Trends in the birth order-specific and total fertility rates among Kazakhs

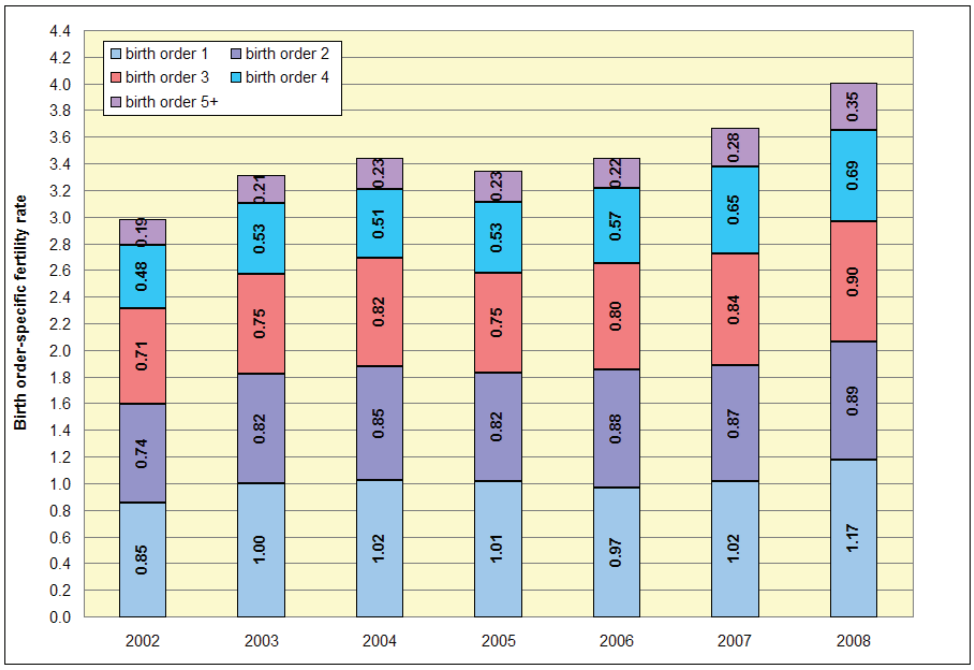


Note: Rates of the second kind

Source: Author's calculation based on data from the Department of Statistics in South Kazakhstan

The Uzbek women are considered to be more traditional and influenced by the conservative culture compared to the Kazakh. Still, the weights of the fertility in the fifth births are significantly lower among the Uzbek women in contrast to the Kazakhs with a relatively similar total fertility rate (fig. 35).

Figure 35: Trends in the birth order-specific and total fertility rates among Uzbeks



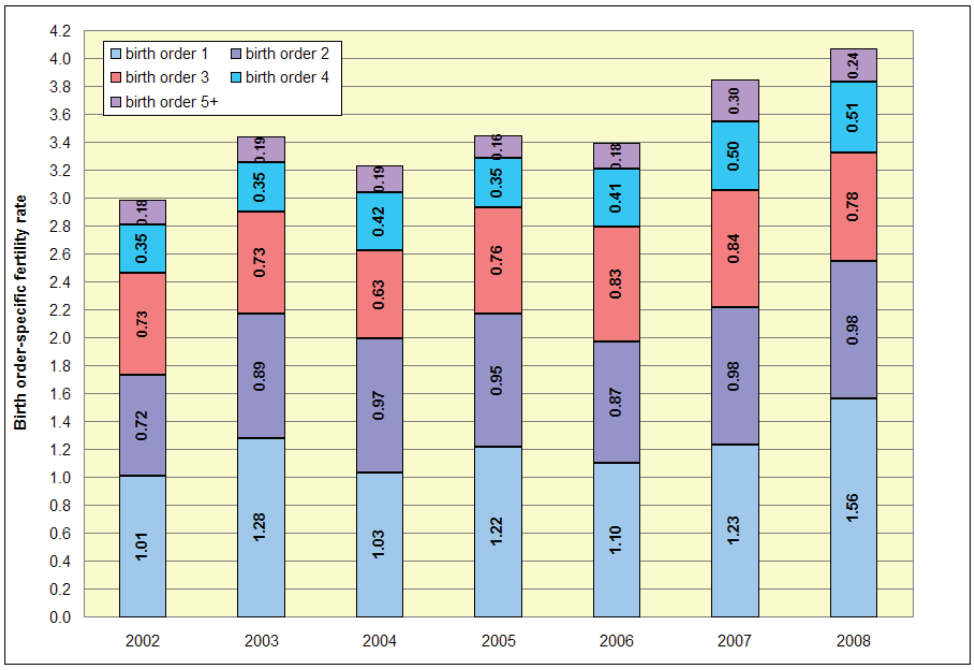
Note: Rates of the second kind

Source: Author's calculation based on data from the Department of Statistics in South Kazakhstan

The increase in the birth order-specific fertility rate occurred in the first order among all the ethnicities to a considerable extent. The increase among the Uzbek women was noted with a difference of 0.32 between the years of 2002 and 2008 (fig. 35). The second comparative rise pertained to the fourth child (0.21) what is related to the aforementioned reproductive behavior of women due to the historical changes in the country.

Unlike the Kazakhs and Uzbeks, the Azerbaijani women did not carry a substantial increase in the fourth or fifth child (fig. 36). The considerable upsurge pertains to the first and second births (fig. 36). This result has a logical background as the majority of the Azerbaijanis live in rural areas of South Kazakhstan, where women felt the economic crisis of the 1990s to a lesser extent because they live off farming. Living in rural area, maintaining family ties and traditions Azerbaijani women did not have mass postponement of birth. Moreover, according to their traditions early marriages are very common, therefore, high results in the first and second birth orders apply to the young women born in the 1980s. Slight increase in the third, fourth, fifth and over births corresponds to their traditional reproduction that has not had a sharp leap during the observed period.

Fig. 36: Trends in the birth order-specific and total fertility rates among Azerbaijanis

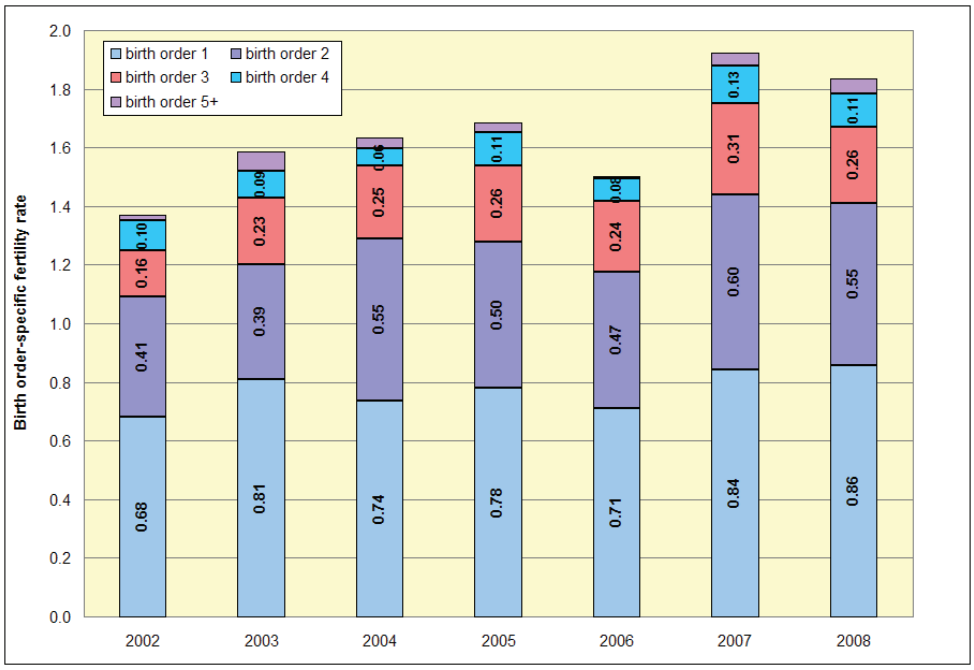


Note: Rates of the second kind

Source: Author's calculation based on data from the Department of Statistics in South Kazakhstan

Based on the analysis it can be pointed out that the substantial fertility weight among the Tatar women is mainly observed in the first births (fig. 37). Although there is a slight increase in the number of the second and third children born during the six years period (2002-2008), it is not significant as the number of the first births is twice as high as the second ones, and is comparatively higher as opposed to the third order. In case of the fourth order children, there was no upsurge since for the Tatars family institution has become outdated (fig. 37).

Fig. 37: Trends in the birth order-specific and total fertility rates among Tatars



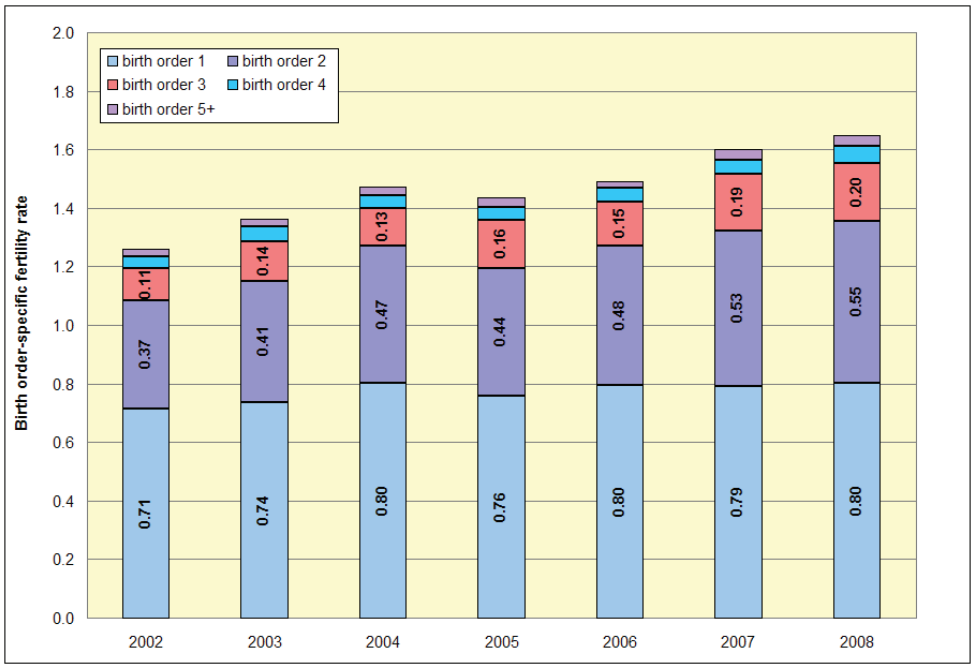
Note: Rates of the second kind

Source: Author's calculation based on data from the Department of Statistics in South Kazakhstan

The fertility intensity increase in higher births including the third, fourth, fifth and over is not expected among the European group of women since the reproductive behavior has modernized among them as mentioned above. During the time of compensative fertility however, the reproductive intensity has increased among all the ethnicities and therefore, it is vital to understand the contribution of the birth orders towards fertility among the European group.

The growth of the second births among the Russian women was twice as high (0.18) as the first and third births (fig. 38) between 2002 and 2008. This finding directly indicates that the Russian women postponed the birth of the second child during the time of economic depression.

Fig. 38: Trends in the birth order-specific and total fertility rates among Russians

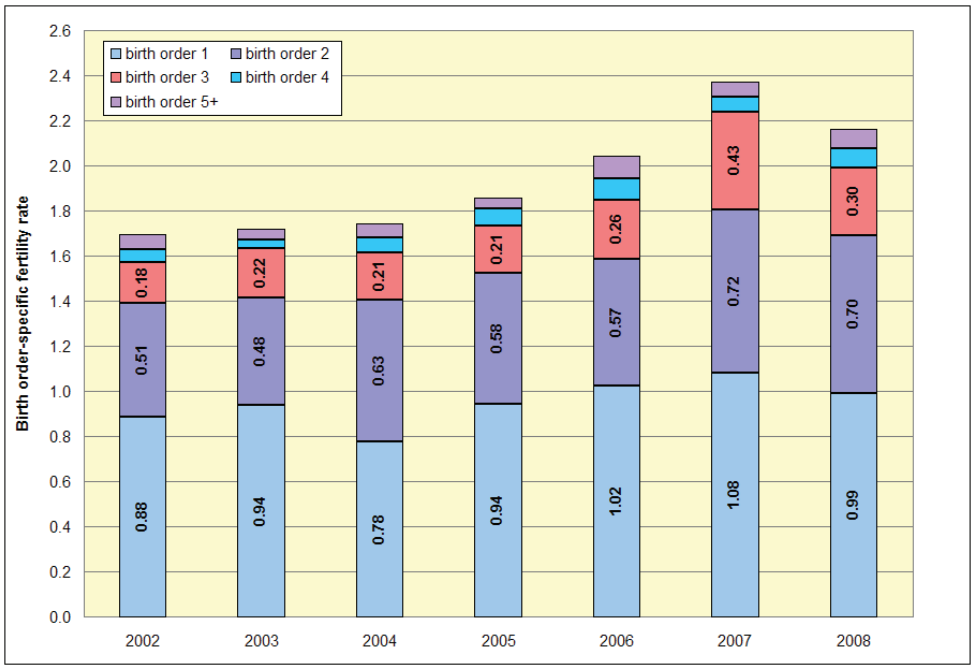


Note: Rates of the second kind

Source: Author's calculation based on data from the Department of Statistics in South Kazakhstan

The Ukrainian women like the Russian had been postponing the second births until 2000s when they realized those births which subsequently resulted in the considerable increase of the fertility (0.19) during the period of 2002 and 2008 (fig. 39). Although the Ukrainian women have the birth rates at first and third children slightly higher than Russians but these differences related only to comparatively higher the total fertility rate among them.

Fig. 39: Trends in the birth order-specific and total fertility rates among Ukrainians

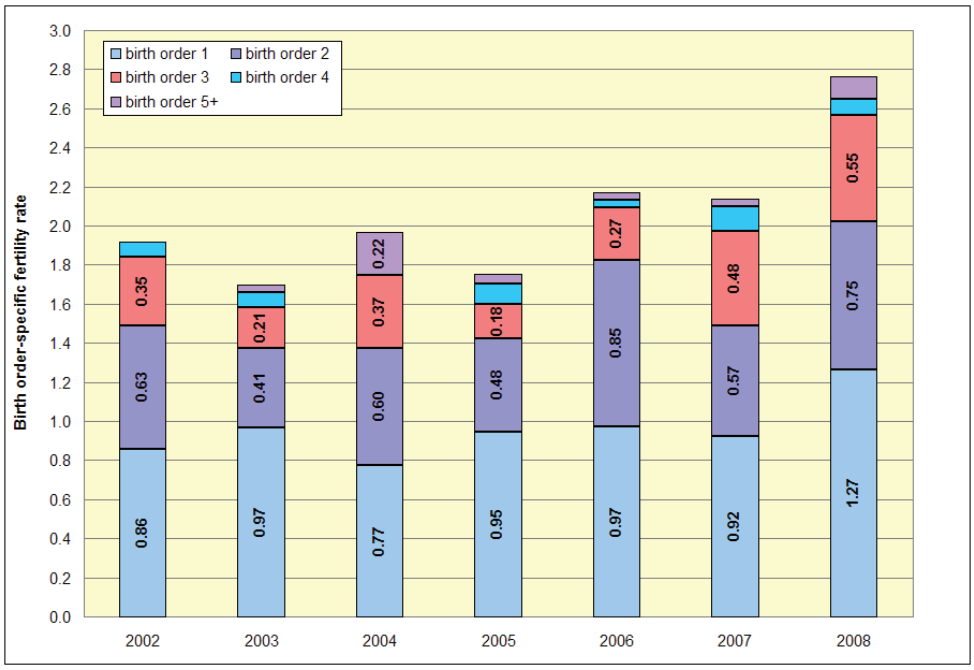


Note: Rates of the second kind

Source: Author's calculation based on data from the Department of Statistics in South Kazakhstan

Unlike the Russian and Ukrainian females, the Germans have a substantial increase in the first births (0.41) and in the second births the rise is less than in the third (fig. 40). As noted above, the German females had different reproductive behavior over against the rest of the ethnicities in the European group. Bearing in mind this fact, the fertility rise in the third births (0.20) between 2002 and 2008 might have occurred due to the implementation of the last or first births. The considerable increase in the first births among the German women is not a sufficient reason that these births are related to the young females born in the 1980s since the majority of them move abroad or choose to get a degree. As a result, this finding needs a deeper analysis of the reproductive behavior of the German females in South Kazakhstan.

Fig. 40: Trends in the birth order-specific and total fertility rates among Germans



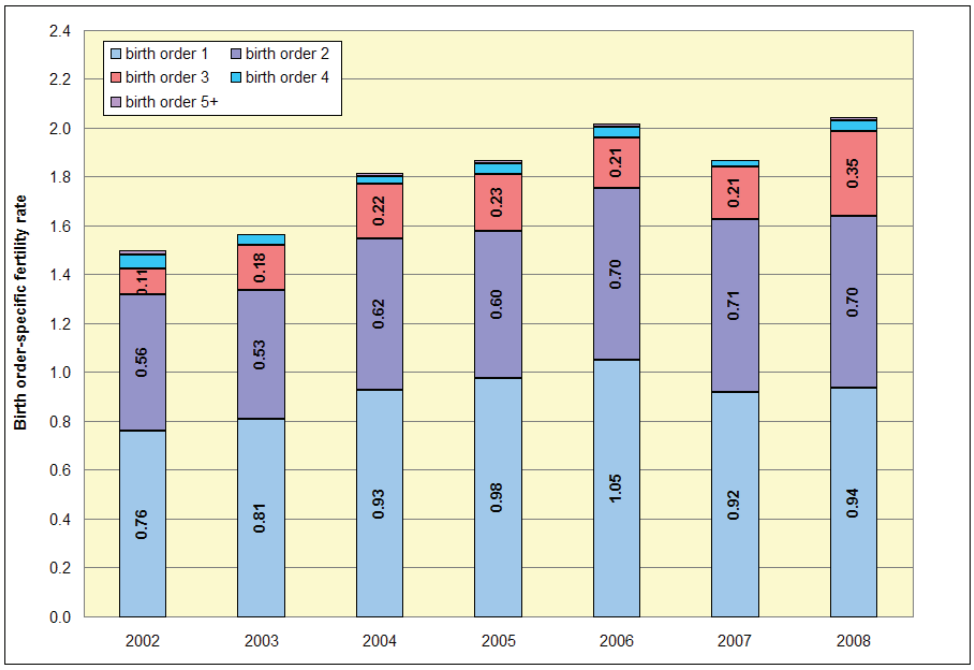
Note: Rates of the second kind

Source: Author's calculation based on data from the Department of Statistics in South Kazakhstan

Surprising increase in the third births (0.24) happened among the Korean females between 2002 and 2008 years (fig. 41). Historically, the Koreans used to have large families only in rural areas with up to four children but during the Soviet period their reproductive behavior changed considerably in both (urban and rural) places of residence and brought the reduction of the number of children down to two per family. Hence, the increase in the third child is incredible and probably indicates the fertility quantum increase in 2008 that has been presented above. The increase in the first order births was substantial (0.18) between the first and the last observed years (fig. 41).

The findings have showed that the recuperative fertility of the Korean females influenced the first and third births (fig. 41).

Fig. 41: Trends in the birth order-specific and total fertility rates among Koreans



Note: Rates of the second kind

Source: Author's calculation based on data from the Department of Statistics in South Kazakhstan

The thorough analysis of the fertility by ethnicities has showed that South Kazakhstani reproduction is mostly based on the Turkic group, except for Tatars. The Kazakh, Uzbek and Azerbaijani females have on average four children. These total fertility rates are considerably higher as opposed to the entire country.

The Russians, Tatars and Koreans are in the group of risk since their total fertility rates have not reached even the simple replacement level. The reproductive situation among the Ukrainian and German females is slightly better since the total fertility rates of the Ukrainians are on a par with the replacement level and are relatively higher among the Germans.

The birth order shows that the Turkic group is in a more favorable situation as the substantial fertility accounts for both the first births and the higher birth orders as well. The European group of females relies only on the first and second births.

The fertility among all presented ethnicities during the observed years has risen mainly due to the improvements in the socio-economic situation and revived beliefs of people to a better life.

6.2.2 Fertility difference by marital status

Changes of reproductive behavior are based on various factors such as urban-rural differences, ethnic differentiations, number of birth orders and marital status. The fertility variation according to marital status is a very important issue in the developed countries (Bosveld, 1996) since the number

of the extra-marital births (births of single mothers and those living in cohabitation) has enlarged to a great extent in the 1980s.

For Kazakhstan the question of the extramarital births was not alarming during the Soviet period with strict moral regime in place, when couples who desired to have children required to have registration of their marriage as otherwise it was a problem to receive medical care or government allowance. It was difficult to register birth out of wedlock because of the influence of the public opinion. Today, classification of births by marital status has the following meanings: married - birth occurred in marriage, single - the registration of the child birth was done by a mother without paternity, unmarried (cohabitation) – the registration of the child birth was done by a mother and paternity was recorded by mutual statement of both mother and father or by court decision. Using this definition we distinguish marital births occurred in marriage, while extramarital births characterized by sum of births among single mothers and those living in cohabitation.

Within the last ten years at the time of socio-economic development in democratic Kazakhstan, the emergence of extramarital births is not punished by public, even if it not approved. The number of children born out of wedlock has increased and in 2010 it was 19.11 % (Demographic yearbook, 2011) out of all live births. In case of South Kazakhstan, the percentage of extramarital births was 16.87 % (Demographic yearbook, 2011) among all live births in the region. This fact indicates that reproductive behavior is changing towards modernized one as well.

Considering the existence of extramarital births we aimed to analyze the extent to which it increased or decreased during 2002-2008 years (available data). Women of what age make a significant contribution to the extramarital reproduction? Before analyzing the findings let us make a remark that the fertility analysis by marital status is based on the percentage since the number of mothers was not differentiated by marital status in the data of the Department of Statistics in South Kazakhstan, therefore the estimation is expressed as a rate of second kind.

During the analyzed period, marital fertility covered the major part of the overall fertility. Meanwhile, the extramarital fertility has been shifting between 16.60 % and 19.50 % (tab. 16). The highest weight of extramarital births occurred in 2004 and 2005 years showing approximately equal distribution by single mothers and those who live in cohabitation (tab. 16). The conjugal union such as cohabitation was not accepted during the Soviet period but with changes in time and values it has become possible to have a child without registration of marriage.

Tab.16 Total fertility rates and age-specific fertility rates according to marital status; (in %) between brackets, South Kazakhstan, 2002-2008

	2002	2003	2004	2005	2006	2007	2008
All births							
Total	2.84 (100.0)	2.98 (100.0)	3.29 (100.0)	3.21 (100.0)	3.43 (100.0)	3.63 (100.0)	3.93 (100.0)
In marriage	2.34 (82.3)	2.44 (82.1)	2.65 (80.5)	2.58 (80.5)	2.80 (81.5)	3.02 (83.1)	3.28 (83.4)
In cohabitation	0.21(7.5)	0.24 (8.1)	0.32 (9.8)	0.32 (9.9)	0.35 (10.3)	0.33 (9.1)	0.29 (7.4)
Single mothers	0.29 (10.2)	0.29 (9.7)	0.32 (9.7)	0.31 (9.6)	0.28 (8.2)	0.28 (7.7)	0.36 (9.2)
15-24							
Total	1.11 (100.0)	1.17 (100.0)	1.25 (100.0)	1.20 (100.0)	1.22 (100.0)	1.26 (100.0)	1.36 (100.0)
In marriage	0.85 (76.6)	0.89 (76.4)	0.93 (74.0)	0.89 (74.2)	0.92 (75.8)	0.98 (77.6)	1.06 (77.7)
In cohabitation	0.11 (10.2)	0.13 (10.8)	0.17 (13.3)	0.16 (13.3)	0.17(13.7)	0.16 (12.4)	0. 14 (10.2)
Single mothers	0.15 (13.2)	0.15 (12.8)	0.16 (12.7)	0.15 (12.5)	0.13 (10.5)	0.13 (10.0)	0.16 (12.1)
25-34							
Total	1.39 (100.0)	1. 46 (100.0)	1.63 (100.0)	1.59 (100.0)	1.76 (100.0)	1.86 (100.0)	2.01 (100.0)
In marriage	1.20 (86.0)	1.25 (85.6)	1.37 (84.1)	1.34 (84.0)	1.49 (84.8)	1.60 (86.1)	1.73 (86.4)
In cohabitation	0.08 (5.8)	0.10 (6.6)	0.13 (7.8)	0.13 (8.1)	0.15 (8.4)	0.14 (7.5)	0.12 (5.9)
Single mothers	0.11 (8.2)	0.11 (7.8)	0.13 (8.1)	0.13 (7.9)	0.12 (6.8)	0.12 (6.4)	0.15 (7.6)
35+							
Total	0.33 (100.0)	0.35 (100.0)	0.41 (100.0)	0.41 (100.0)	0.46 (100.0)	0.51 (100.0)	0.56 (100.0)
In marriage	0.29 (86.4)	0.30 (86.7)	0.35 (86.5)	0.35 (85.4)	0.39 (84.3)	0.44 (86.0)	0.48 (86.4)
In cohabitation	0.02 (5.3)	0.02 (5.8)	0.03 (6.7)	0.03 (6.8)	0.04 (8.6)	0.04 (6.9)	0.03 (5.9)
Single mothers	0. 03 (8.2)	0.03 (7.5)	0.03 (6.8)	0.03 (7.9)	0.03 (7.2)	0.04 (7.1)	0.04 (7.7)

Note: Rates of the second kind

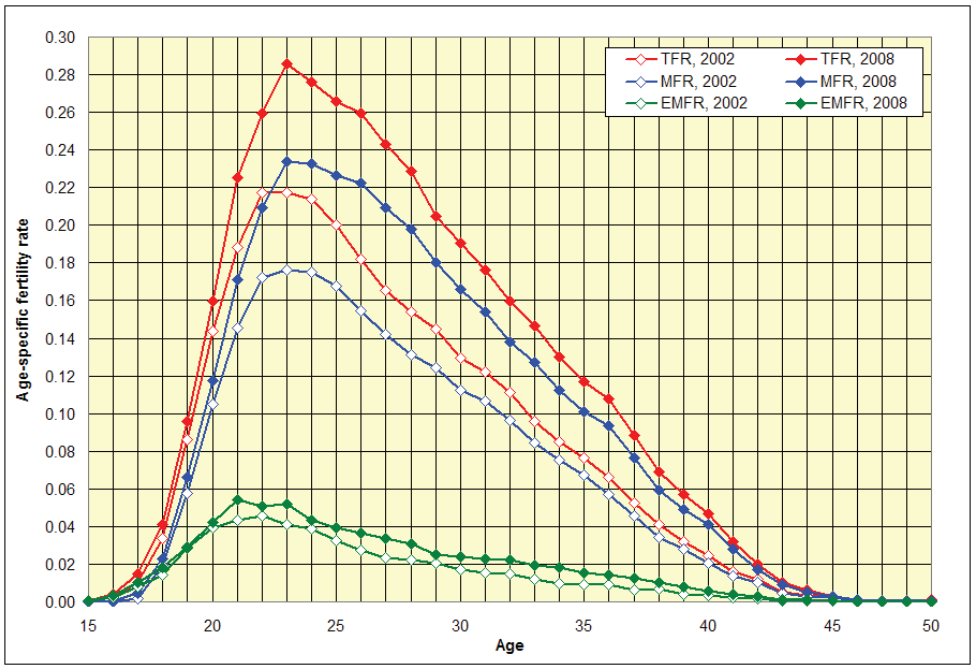
Source: Author's calculation based on data from the Department of Statistics in South Kazakhstan

Women of older age have a relatively lower percentage of extramarital births since they grew up with the old values when the family institute had its strong power. The highest level of extramarital births is related to 15-24 year old women. Taking into account that the youngest women (15-24 years old) were born at the time of "perestroika" and during the 1990s, it indicates that their childhood and adolescence corresponded to the years of independence in Kazakhstan. The life values changed considerably by then since all the previous values had been rejected and the new ones had not been inculcated yet. Hence, 15-24 year old women were to determine their own values.

The modernization expedited the adoption of new values in accordance with independent lifestyle. Nevertheless, the marital fertility maintains its weight likely due to traditionalism in the region that is reflected by the strict family ties.

The increase of fertility during the observed period (2002-2008) had comparative rise among married females with the highest intensity at the age of 23 (fig. 42).

Fig. 42: Changes in the age-specific fertility rates by marital status in South Kazakhstan, 2002 and 2008



Note: Rates of second kind

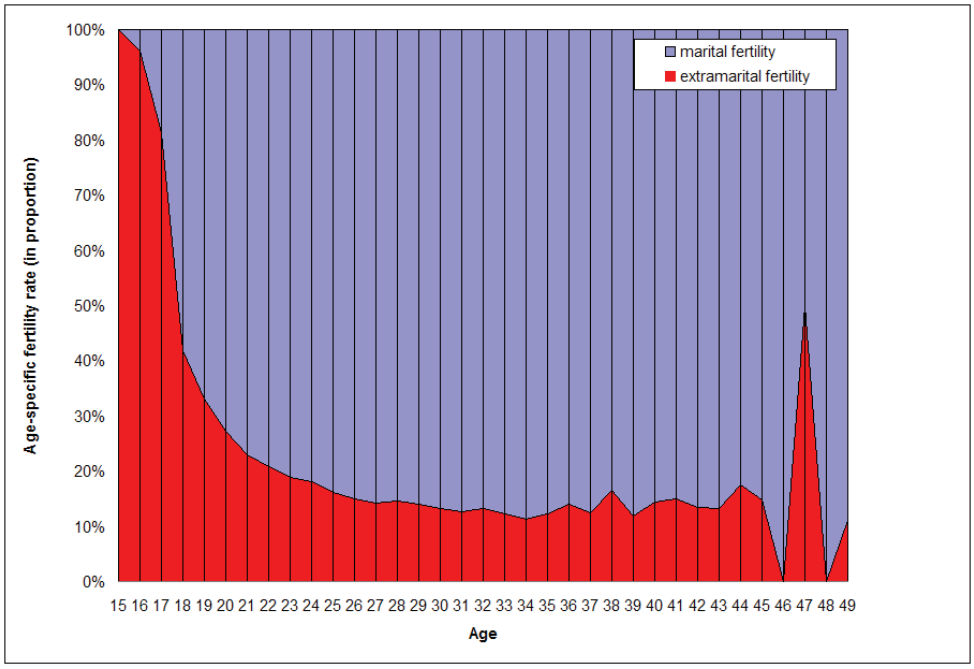
TFR- total fertility rate, MFR-marital fertility rate, EMFR-extramarital fertility rate

Source: Author's calculation based on data from the Department of Statistics in South Kazakhstan

There is a slight increase in the extramarital fertility during the period of 2002 and 2008 and besides, the highest intensity has occurred among the young 21-23 year old females (fig. 42). These changes signalize the problem of increasing number of unmarried mothers and the weakness of a family union.

The significant portion of females at the youngest age (15-18 years) entails extramarital births (fig. 43) what indicates the lack of knowledge and their irresponsibility. Obviously the number of births at the age of 15-18 is not substantial, albeit when all live births at the age of 15 (14 cases) pertain to single mothers it becomes alarming (fig. 43).

Fig. 43: Relative age-specific fertility rates by marital status in South Kazakhstan, 2002, (in %)



Note: Rates of the second kind

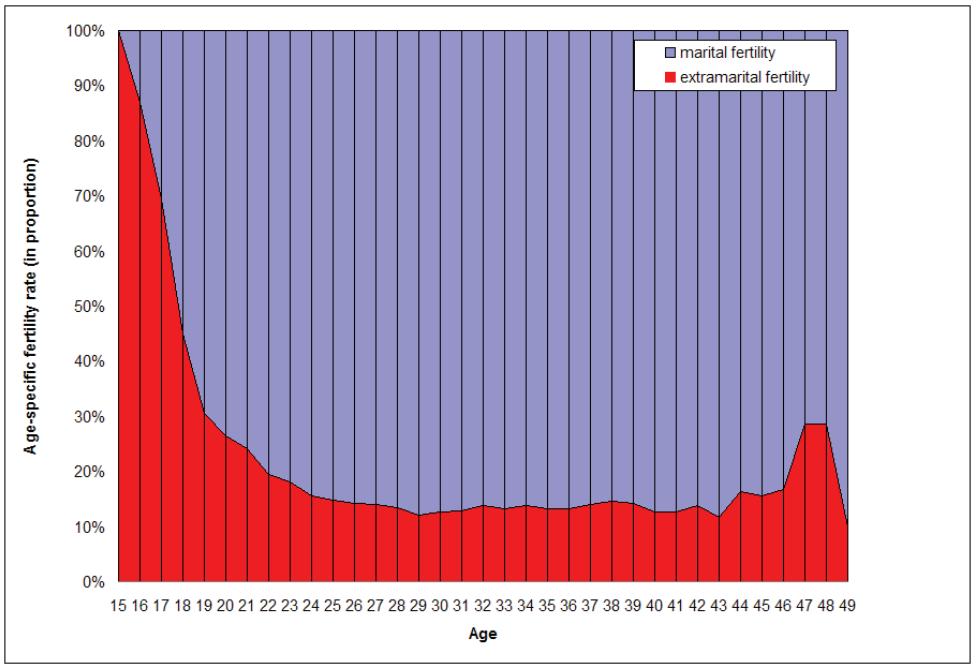
Source: Author's calculation based on data from the Department of Statistics in South Kazakhstan

Based on the Soviet inheritance and strict traditions of South Kazakhstan the reproductive education is considered to be an embarrassing subject to discuss. Through this fact the lack of knowledge among the youth/teenagers aggravates the conditions.

The increase of extramarital births at the age of 47 occurred with regard to small number of births among females at older reproductive age (fig. 43). Most of the females aged 25 to 45 years give birth in marriage what corresponds to traditional South society.

The fertility dynamics by marital status did not shift much after six years having relatively the same distribution in 2008 (fig. 44).

Fig. 44: Relative age-specific fertility rates by marital status in South Kazakhstan, 2008, (in %)



Note: Rates of the second kind

Source: Author's calculation based on data from the Department of Statistics in South Kazakhstan

From the significant weight of extramarital fertility among the youth it is evident that the first births are identified by higher rates of fertility out of wedlock. In view of this fact it was essential to analyze the extent of coverage of each birth by marital and extramarital fertilities.

To begin with, it displayed considerable weight of extramarital fertility among the first births (tab. 17). Furthermore, the number of extramarital births by single mothers is slightly higher than among the mothers living in cohabitation, except for 2006 and 2007 years (tab. 17). The extramarital births signalize forthcoming problems but the comparative increase of single mothers is even more unfavorable than the children born in conjugal union such as cohabitation.

Tab.17 Total fertility rates and age-specific fertility rates according to marital status and by birth order; (in %) between brackets, South Kazakhstan, 2002-2008

	2002	2003	2004	2005	2006	2007	2008
1st birth order							
Total	0.85 (100.0)	0.97 (100.0)	1.00 (100.0)	0.98 (100.0)	0.98 (100.0)	1.04 (100.0)	1.21 (100.0)
In marriage	0.54 (63.6)	0.63 (65.0)	0.62 (61.5)	0.61 (61.9)	0.63 (63.8)	0.69 (66.1)	0.82 (67.9)
In cohabitation	0.13 (15.0)	0.15 (15.3)	0.19 (19.1)	0.18 (18.7)	0.19 (19.4)	0.18 (17.7)	0.17 (14.1)
Single mothers	0.18 (21.4)	0.19 (19.7)	0.20 (19.4)	0.19 (19.5)	0.17 (16.8)	0.17 (16.1)	0.22 (18.0)
2nd birth order							
Total	0.68 (100.0)	0.71 (100.0)	0.78 (100.0)	0.78 (100.0)	0.83 (100.0)	0.83 (100.0)	0.87 (100.0)
In marriage	0.56 (82.3)	0.58 (82.4)	0.63 (80.1)	0.62 (80.5)	0.67 (80.9)	0.69 (82.5)	0.73 (83.9)
In cohabitation	0.05 (7.9)	0.06 (8.7)	0.08 (10.5)	0.08 (10.5)	0.09 (11.2)	0.08 (10.2)	0.07 (7.6)
Single mothers	0.07 (9.8)	0.06 (9.0)	0.07 (9.3)	0.07 (9.0)	0.07 (7.8)	0.06 (7.3)	0.07 (8.5)
3rd birth order							
Total	0.60 (100.0)	0.59 (100.0)	0.69 (100.0)	0.66 (100.0)	0.72 (100.0)	0.75 (100.0)	0.77 (100.0)
In marriage	0.55 (92.8)	0.55 (92.9)	0.63 (90.5)	0.60 (90.4)	0.65 (89.7)	0.68 (90.4)	0.70 (90.5)
In cohabitation	0.02 (3.1)	0.02 (3.6)	0.03 (4.6)	0.03 (5.2)	0.04 (5.6)	0.04 (5.2)	0.03 (4.3)
Single mothers	0.02 (4.1)	0.02 (3.5)	0.03 (4.8)	0.03 (4.4)	0.03 (4.7)	0.03 (4.3)	0.04 (5.3)
4th birth order							
Total	0.45 (100.0)	0.44 (100.0)	0.49 (100.0)	0.48 (100.0)	0.56 (100.0)	0.61 (100.0)	0.62 (100.0)
In marriage	0.43 (96.2)	0.42 (96.0)	0.47 (95.7)	0.46 (95.0)	0.52 (94.4)	0.58 (95.0)	0.59 (94.7)
In cohabitation	0.01 (1.7)	0.01 (2.0)	0.01 (2.3)	0.01 (2.3)	0.02 (3.7)	0.02 (2.7)	0.01 (2.3)
Single mothers	0.01 (2.1)	0.01 (2.0)	0.01 (2.0)	0.01 (2.6)	0.01 (2.0)	0.01 (2.3)	0.02 (3.0)
5th and over							
Total	0.25 (100.0)	0.27 (100.0)	0.33 (100.0)	0.31 (100.0)	0.34 (100.0)	0.40 (100.0)	0.45 (100.0)
In marriage	0.25 (96.6)	0.26 (96.8)	0.31 (96.5)	0.30 (96.0)	0.33 (95.9)	0.39 (97.0)	0.43 (96.6)
In cohabitation	0.00 (1.3)	0.00 (1.0)	0.00 (1.4)	0.01 (2.0)	0.01 (2.7)	0.01 (1.6)	0.01 (1.3)
Single mothers	0.01 (2.1)	0.01 (2.2)	0.01 (2.0)	0.01 (2.1)	0.00 (1.4)	0.01 (1.4)	0.01 (2.1)

Note: Rates of the second kind

Source: Author's calculation based on data from the Department of Statistics in South Kazakhstan

Each consequent birth order after the first shows that the percentage of the second, third and over order children born out of wedlock decreases as older mature females, for the most part, give birth in marriage. These differentiations clearly indicate that reproductive behavior has changed among the youth while the adult females stick to traditional model of reproduction.

Rapid changes of reproductive models appeared in the urban areas and even among the rural females who moved to urban places. That gives the reason to analyze the differences by the place of residence.

In both areas (urban and rural) marital reproduction maintains its substantial portion in the overall fertility. Married females in urban areas constituted the marital fertility at 78.5 % (tab. 18) and rural

females at 87.3 % (tab. 20) in 2008 year. Nonetheless, even from the total marital fertility rates expressed in percent it is evident that the number of extramarital births is comparatively higher in urban areas.

Urban area has been developing with the accelerating effect towards modern lifestyle that has granted the opportunity for the females to adopt several options of having children. In the mean time, rural women remain under the control of traditional society and generally accepted way of life.

The alarming increase of extramarital births occurred not only among the youth in urban areas but corresponded to females at the age of 25-34 and even after 35 (tab. 18). Comparing the total fertility rates among the single mothers aged 25 and over awe has found that they are higher among the urban women by 5.8 % up to 9.4 % (tab. 18 and 20) in comparison with single rural females.

Tab.18 Total fertility rates and age-specific fertility rates according to marital status; (in %) between brackets, in urban South Kazakhstan, 2002-2008

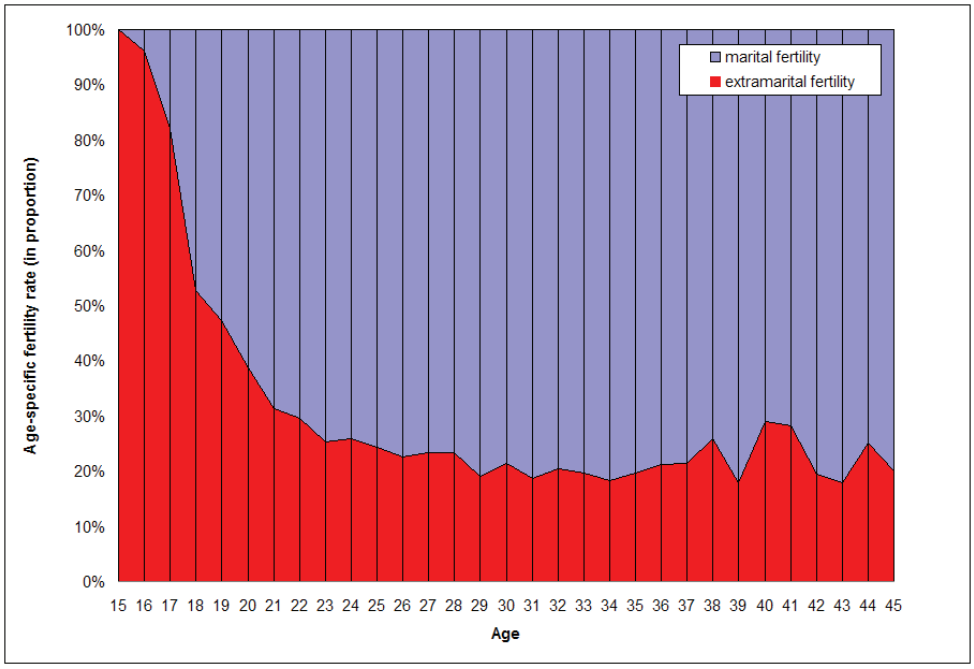
	2002	2003	2004	2005	2006	2007	2008
All births							
Total	2.28 (100.0)	2.56 (100.0)	2.96 (100.0)	3.13 (100.0)	3.40 (100.0)	3.62 (100.0)	3.98 (100.0)
In marriage	1.68 (73.9)	1.91 (74.8)	2.18 (73.9)	2.33 (74.3)	2.60 (76.5)	2.76 (76.5)	3.12 (78.5)
In cohabitation	0.21 (9.3)	0.24 (9.3)	0.32 (10.8)	0.34 (10.9)	0.36 (10.7)	0.40 (11.2)	0.34 (8.6)
Single mothers	0.38 (16.8)	0.41 (15.9)	0.45 (15.3)	0.46 (14.8)	0.43 (12.8)	0.45 (12.4)	0.51 (12.9)
15-24							
Total	0.89 (100.0)	1.01 (100.0)	1.13 (100.0)	1.21 (100.0)	1.24 (100.0)	1.34 (100.0)	1.64 (100.0)
In marriage	0.60 (67.0)	0.69 (68.2)	0.76 (67.1)	0.82 (68.0)	0.89 (71.6)	0.95 (71.5)	1.2 (73.5)
In cohabitation	0.11 (11.9)	0.11 (11.3)	0.15 (13.4)	0.16 (13.1)	0.15 (12.3)	0.17 (12.9)	0.17 (10.4)
Single mothers	0.19 (21.2)	0.21 (20.5)	0.22 (19.6)	0.23 (19.0)	0.20 (16.1)	0.21 (15.6)	0.26 (16.1)
25-34							
Total	1.12 (100.0)	1.24 (100.0)	1.45 (100.0)	1.52 (100.0)	1.69 (100.0)	1.78 (100.0)	1.80 (100.0)
In marriage	0.88 (78.4)	0.98 (79.0)	1.13 (77.7)	1.19 (78.2)	1.35 (79.7)	1.42 (79.7)	1.47 (81.7)
In cohabitation	0.09 (7.7)	0.10 (7.9)	0.14 (9.4)	0.15 (9.7)	0.16 (9.6)	0.18 (10.1)	0.13 (7.4)
Single mothers	0.16 (13.9)	0.16 (13.0)	0.19 (12.9)	0.18 (12.0)	0.18 (10.7)	0.18 (10.2)	0.19 (10.9)
35+							
Total	0.27 (100.0)	0.30 (100.0)	0.37 (100.0)	0.40 (100.0)	0.47 (100.0)	0.50 (100.0)	0.54 (100.0)
In marriage	0.21 (78.0)	0.24 (79.8)	0.30 (79.8)	0.32 (78.5)	0.36 (78.0)	0.39 (78.1)	0.43 (80.4)
In cohabitation	0.02 (7.8)	0.02 (7.9)	0.03 (8.7)	0.04 (8.9)	0.05 (10.7)	0.05 (10.4)	0.04 (8.1)
Single mothers	0.04 (14.2)	0.04 (12.2)	0.04 (11.5)	0.05 (12.6)	0.05 (11.3)	0.06 (11.6)	0.06 (11.5)

Note: Rates of the second kind

Source: Author's calculation based on data from the Department of Statistics in South Kazakhstan

The weight of extramarital fertility among urban females is clearly displayed in figures 45 and 46. Unlike rural females at the age of 25 and over, urban females represent on average 20.0 % of extramarital births.

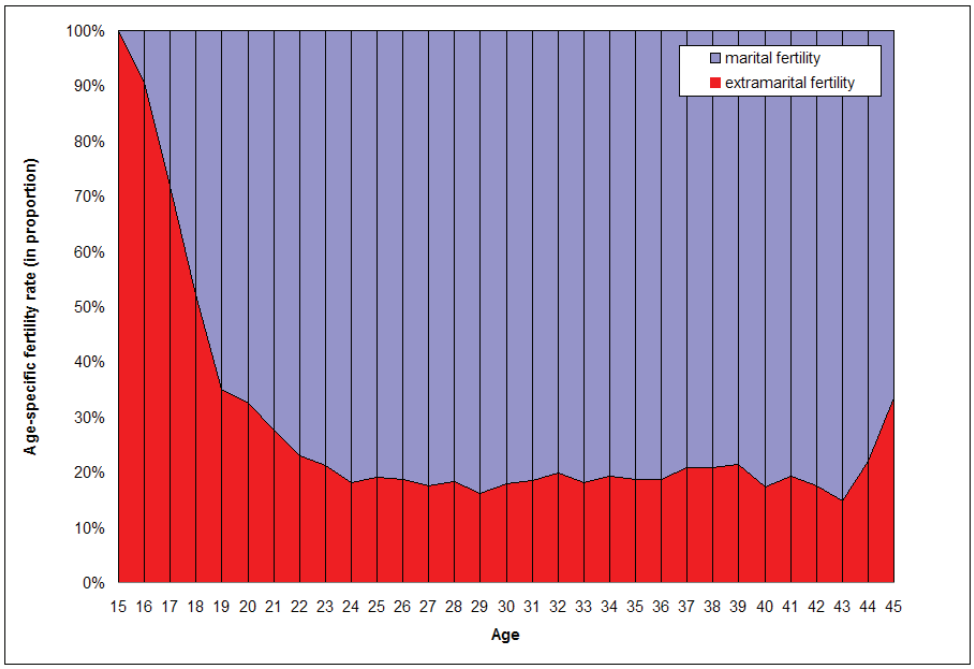
Fig. 45: Relative age-specific fertility rates by marital status in urban South Kazakhstan, 2002 (in %)



Note: Rates of the second kind

Source: Author's calculation based on data from the Department of Statistics in South Kazakhstan

Fig. 46: Relative age-specific fertility rates by marital status in urban South Kazakhstan, 2008, (in %)



Note: Rates of the second kind

Source: Author's calculation based on data from the Department of Statistics in South Kazakhstan

The findings on fertility by marital status in urban areas point out that extramarital reproduction may occur to a considerable extent not only among the first births. As seen from table 19, significant amount of births among the single mothers accounts for the first child and the second one to some extent. The number of the first children born out of wedlock covers almost half of all the births. In 2002, for instance, the total sum of out of wedlock first births by single mothers and females living in cohabitation constituted 45.9 % (tab. 19).

Tab.19 Total fertility rates and age-specific fertility rates according to marital status and by birth order; (in %) between brackets, in urban South Kazakhstan, 2002-2008

	2002	2003	2004	2005	2006	2007	2008
1st birth order							
Total	0.88 (100.0)	1.06 (100.0)	1.10 (100.0)	1.17 (100.0)	1.20 (100.0)	1.28 (100.0)	1.33 (100.0)
In marriage	0.48 (54.2)	0.62 (58.4)	0.62 (56.2)	0.67 (57.5)	0.72 (60.1)	0.78 (60.6)	0.84 (63.5)
In cohabitation	0.15 (16.5)	0.16 (14.9)	0.20 (18.0)	0.20 (17.5)	0.21 (17.6)	0.23 (17.7)	0.19 (14.6)
Single mothers	0.26 (29.4)	0.28 (26.7)	0.28 (25.7)	0.29 (25.0)	0.27 (22.3)	0.28 (21.7)	0.29 (21.9)
2nd birth order							
Total	0.59 (100.0)	0.65 (100.0)	0.77 (100.0)	0.81 (100.0)	0.89 (100.0)	0.93 (100.0)	0.97 (100.0)
In marriage	0.47 (78.3)	0.52 (79.1)	0.59 (76.2)	0.62 (76.4)	0.70 (78.5)	0.73 (78.1)	0.78 (80.5)
In cohabitation	0.05 (7.9)	0.05 (8.2)	0.08 (10.6)	0.09 (11.0)	0.09 (10.6)	0.11 (11.4)	0.08 (8.3)
Single mothers	0.08 (13.7)	0.08 (12.7)	0.10 (13.3)	0.10 (12.6)	0.10 (10.8)	0.10 (10.5)	0.10 (11.3)
3rd birth order							
Total	0.45 (100.0)	0.46 (100.0)	0.58 (100.0)	0.61 (100.0)	0.69 (100.0)	0.71 (100.0)	0.78 (100.0)
In marriage	0.41 (91.2)	0.41 (91.0)	0.51 (87.5)	0.54 (87.9)	0.60 (87.6)	0.62 (87.2)	0.68 (88.1)
In cohabitation	0.01 (3.3)	0.02 (3.7)	0.03 (4.8)	0.03 (5.4)	0.04 (5.6)	0.05 (6.4)	0.03 (4.6)
Single mothers	0.03 (5.6)	0.02 (5.3)	0.04 (7.6)	0.04 (6.7)	0.05 (6.9)	0.05 (6.4)	0.05 (7.3)
4th birth order							
Total	0.24 (100.0)	0.26 (100.0)	0.32 (100.0)	0.35 (100.0)	0.42 (100.0)	0.47 (100.0)	0.54 (100.0)
In marriage	0.22 (93.8)	0.24 (94.4)	0.30 (93.7)	0.33 (92.5)	0.39 (93.0)	0.43 (91.5)	0.49 (91.7)
In cohabitation	0.00 (1.8)	0.01 (2.2)	0.01 (2.5)	0. 01 (2.8)	0.01 (3.3)	0.02 (4.4)	0.01 (3.1)
Single mothers	0.01 (4.3)	0.01 (3.4)	0.01 (3.8)	0.02 (4.6)	0.02 (3.7)	0.02 (4.1)	0.02 (5.1)
5th and over							
Total	0.11 (100.0)	0.12 (100.0)	0.18 (100.0)	0.19 (100.0)	0.19 (100.0)	0.23 (100.0)	0.35 (100.0)
In marriage	0.10 (93.8)	0.11 (93.6)	0.17 (92.3)	0.17 (91.1)	0.18 (94.1)	0.22 (94.2)	0.32 (93.8)
In cohabitation	0.00 (1.2)	0.00 (1.5)	0.00 (2.3)	0.01 (2.8)	0.01 (3.1)	0.01 (2.4)	0.00 (1.7)
Single mothers	0.01 (4.9)	0.01 (4.9)	0.01 (5.3)	0.01 (6.1)	0.01 (2.8)	0.01 (3.4)	0.01 (4.5)

Note: Rates of the second kind

Source: Author's calculation based on data from the Department of Statistics in South Kazakhstan

Analyzing the extramarital fertility of the first and second births it should be remarked that it has seen a positive turnout since it slightly decreased during the observed period. However, the number of the third order births has increased among single mothers and females living in cohabitation. All

these findings showed that urban females who were not able to give birth due to several reasons, one of which was historically anchored traditions, have implemented it in the modern times of the 2000s.

Unlike urban females, rural keep traditional model of reproduction as seen from table 20,albeit the majority of births in each age group accounts for the births in marriage.

Tab.20 Total fertility rates and age-specific fertility rates according to marital status; (in %) between brackets, in rural South Kazakhstan, 2002-2008

	2002	2003	2004	2005	2006	2007	2008
All births							
Total	3.27 (100.0)	3.30 (100.0)	3.55 (100.0)	3.27 (100.0)	3.47 (100.0)	3.66 (100.0)	3.57 (100.0)
In marriage	2.83 (86.5)	2.83 (85.9)	2.99 (84.3)	2.77 (84.5)	2.94 (84.8)	3.20 (87.4)	3.11 (87.3)
In cohabitation	0.21 (6.5)	0.25 (7.5)	0.32 (9.1)	0.30 (9.1)	0.34 (9.9)	0.28 (7.8)	0.23 (6.4)
Single mothers	0.23 (7.0)	0.22 (6.6)	0.23 (6.6)	0.21 (6.4)	0.18 (5.3)	0.18 (4.8)	0.23 (6.3)
15-24							
Total	1.28 (100.0)	1.28 (100.0)	1.34 (100.0)	1.20 (100.0)	1.20 (100.0)	1.22 (100.0)	1.19 (100.0)
In marriage	1.04 (81.0)	1.03 (80.5)	1.04 (77.7)	0.94 (78.0)	0.94 (78.3)	0.99 (81.3)	0.96 (81.0)
In cohabitation	0.12 (9.4)	0.13 (10.5)	0.18 (13.2)	0.16 (13.3)	0.17 (14.5)	0.15 (12.2)	0.12 (10.0)
Single mothers	0.12 (9.6)	0.12 (9.0)	0.12 (9.1)	0.10 (8.6)	0.09 (7.2)	0.08 (6.5)	0.11 (9.0)
25-34							
Total	1.60 (100.0)	1.62 (100.0)	1.76 (100.0)	1.65 (100.0)	1.80 (100.0)	1.92 (100.0)	1.85 (100.0)
In marriage	1.43 (89.8)	1.44 (89.0)	1.55 (87.7)	1.44 (87.7)	1.59 (88.0)	1.73 (90.1)	1.67 (90.1)
In cohabitation	0.08 (4.8)	0.09 (5.8)	0.12 (6.9)	0.12 (7.0)	0.14 (7.7)	0.11 (5.9)	0.09 (4.8)
Single mothers	0.09 (5.4)	0.08 (5.1)	0.10 (5.4)	0.09 (5.3)	0.08 (4.3)	0.08 (4.0)	0.09 (5.1)
35+							
Total	0.39 (100.0)	0.39 (100.0)	0.44 (100.0)	0.42 (100.0)	0.47 (100.0)	0.53 (100.0)	0.52 (100.0)
In marriage	0.36 (91.2)	0.36 (91.0)	0.40 (91.0)	0.38 (90.6)	0.41 (89.1)	0.48 (91.6)	0.48 (91.5)
In cohabitation	0.02 (3.9)	0.02 (4.5)	0.02 (5.4)	0.02 (5.2)	0.03 (6.9)	0.02 (4.4)	0.02 (4.0)
Single mothers	0.02 (4.8)	0.02 (4.5)	0.02 (3.6)	0.02 (4.2)	0.02 (3.9)	0.02 (4.0)	0.02 (4.5)

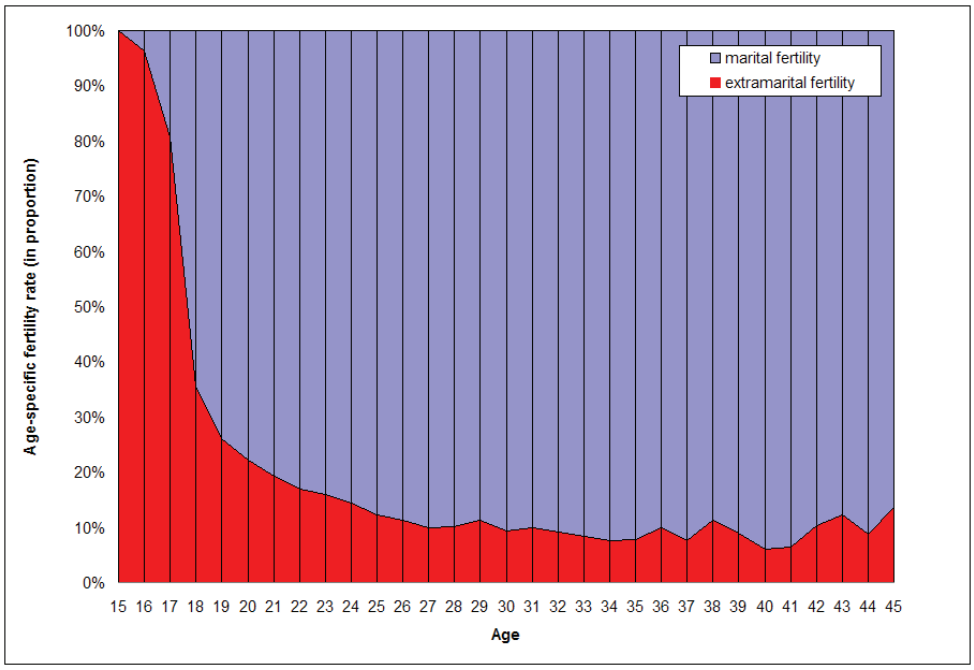
Note: Rates of the second kind

Source: Author's calculation based on data from the Department of Statistics in South Kazakhstan

The highest number of extramarital births applies to the females at the age of 15-24 caused by the lack of knowledge and irresponsibility as mentioned above. Likewise, for 19-24 year old females (after secondary school certificated) it is more related to the purpose of being educated, as a result of what rural females move to the urban area and do not succeed much in urban lifestyle (not all but some of them).

Generally in rural areas of South Kazakhstan marital fertility maintained its mighty levels (figures 47 and 48).

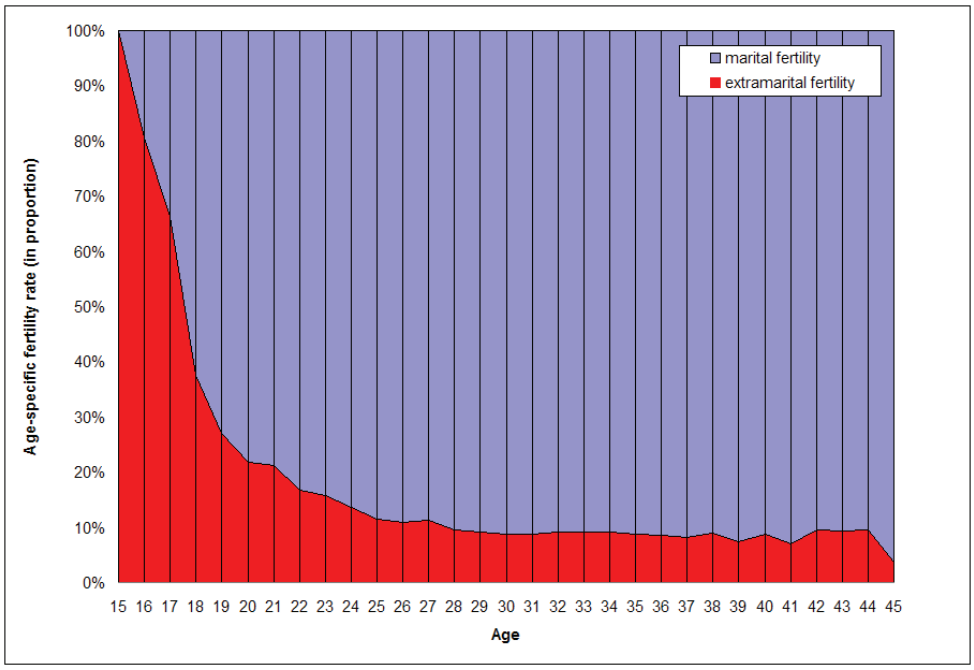
Fig. 47: Relative age-specific fertility rates by marital status in rural South Kazakhstan, 2002, (in %)



Note: Rates of the second kind

Source: Author's calculation based on data from the Department of Statistics in South Kazakhstan

Fig. 48: Relative age-specific fertility rates by marital status in rural South Kazakhstan, 2008, (in %)



Note: Rates of the second kind

Source: Author's calculation based on data from the Department of Statistics in South Kazakhstan

The rural extramarital fertility is mostly widespread among the youth which gives a hint that the significant number of the first births occurred out of wedlock. Analyzing our assumption it has been found that the number of the first children born out of wedlock covered almost one third of the overall fertility at the first births (tab. 21).

Tab.21 Total fertility rates and age-specific fertility rates according to marital status and by birth order; (in %) between brackets, in rural South Kazakhstan, 2002-2008

	2002	2003	2004	2005	2006	2007	2008
1st birth order							
Total	0.84 (100.0)	0.91 (100.0)	0.95 (100.0)	0.86 (100.0)	0.84 (100.0)	0.90 (100.0)	1.00 (100.0)
In marriage	0.59 (70.3)	0.63 (69.8)	0.62 (65.3)	0.56 (65.7)	0.57 (67.3)	0.64 (71.1)	0.72 (72.1)
In cohabitation	0.12 (13.9)	0.14 (15.6)	0.19 (19.8)	0.17 (19.5)	0.18 (20.8)	0.16 (17.6)	0.14 (13.6)
Single mothers	0.13 (15.9)	0.13 (14.6)	0.14 (15.0)	0.13 (14.8)	0.10 (11.9)	0.10 (11.3)	0.14 (14.3)
2nd birth order							
Total	0.75 (100.0)	0.75 (100.0)	0.79 (100.0)	0.75 (100.0)	0.79 (100.0)	0.76 (100.0)	0.70 (100.0)
In marriage	0.63 (84.5)	0.63 (84.3)	0.65 (82.7)	0.63 (83.4)	0.65 (82.7)	0.66 (85.9)	0.62 (87.4)
In cohabitation	0.06 (7.9)	0.07 (8.9)	0.08 (10.5)	0.08 (10.2)	0.09 (11.5)	0.07 (9.3)	0.05 (6.9)
Single mothers	0.06 (7.6)	0.05 (6.9)	0.05 (6.8)	0.05 (6.4)	0.05 (5.8)	0.04 (4.8)	0.04 (5.7)
3rd birth order							
Total	0.70 (100.0)	0.68 (100.0)	0.77 (100.0)	0.69 (100.0)	0.74 (100.0)	0.77 (100.0)	0.70 (100.0)
In marriage	0.66 (93.5)	0.64 (93.8)	0.71 (92.2)	0.64 (91.9)	0.68 (91.1)	0.71 (92.4)	0.64 (92.4)
In cohabitation	0.02 (3.0)	0.02 (3.5)	0.03 (4.5)	0.04 (5.1)	0.04 (5.6)	0.03 (4.5)	0.03 (4.0)
Single mothers	0.02 (3.5)	0.02 (2.7)	0.03 (3.3)	0.02 (3.0)	0.02 (3.4)	0.02 (3.1)	0.03 (3.7)
4th birth order							
Total	0.61 (100.0)	0.57 (100.0)	0.61 (100.0)	0.57 (100.0)	0.64 (100.0)	0.70 (100.0)	0.63 (100.0)
In marriage	0.59 (96.9)	0.55 (96.5)	0.59 (96.5)	0.55 (96.1)	0.61 (95.0)	0.68 (96.6)	0.61 (96.5)
In cohabitation	0.01 (1.7)	0.01 (2.0)	0.01 (2.2)	0.01 (2.1)	0.02 (3.8)	0.01 (2.0)	0.01 (1.8)
Single mothers	0.01 (1.4)	0.01 (1.5)	0.01 (1.3)	0.01 (1.8)	0.01 (1.2)	0.01 (1.4)	0.01 (1.7)
5th and over							
Total	0.37 (100.0)	0.38 (100.0)	0.44 (100.0)	0.40 (100.0)	0.45 (100.0)	0.53 (100.0)	0.53 (100.0)
In marriage	0.36 (97.2)	0.37 (97.5)	0.43 (97.8)	0.39 (97.6)	0.43 (96.4)	0.52 (97.8)	0.52 (97.8)
In cohabitation	0.00 (1.3)	0.00 (0.9)	0.01 (1.2)	0.01 (1.7)	0.01 (2.7)	0.01 (1.4)	0.01 (1.1)
Single mothers	0.01 (1.5)	0.01 (1.5)	0.00 (1.0)	0.00 (0.7)	0.00 (0.9)	0.00 (0.8)	0.01 (1.1)

Note: Rates of the second kind

Source: Author's calculation based on data from the Department of Statistics in South Kazakhstan

The distribution of extramarital births among the higher births (second, third, fourth, fifth and over) is considerably lower. Even this less frequent emergence of extramarital births is not usual for rural females what is most likely associated with the changes of values over time.

The fertility analysis by marital status has revealed that the marital fertility remains fundamental, even though extramarital fertility has a considerable weight especially in urban areas. Most of the

extramarital births are related to the first births. When comparing the number of children born out of wedlock by single mothers and those who live in cohabitation, the more dramatic situation is observed in urban areas as single mothers prevail here. As for the extramarital fertility in rural areas, the births out of wedlock prevail among females who live in cohabitation which is not very crucial since the child birth happens in conditions of some kind of conjugal union.

Summing up, while implementing the fertility analysis in South Kazakhstan, we assess the fertility by the three factors (age, birth order and place of residence) using methods of decomposition in order to understand the effect of changes in reproduction.

Tab.22 Standardization and decomposition of fertility rates in South Kazakhstan, 1999 and 2009

	Standardization		**Decomposition**	
	2009 (population 2)	1999 (population 1)	Difference (effects)	Percent distribution of effects
Age	93.14	93.54	0.40	2.11
Birth order	93.22	93.46	0.24	1.26
Urban-rural	93.36	93.32	-0.03	-0.17
Rates	84.01	102.44	18.43	96.82
GFR	83.51	102.52	19.03	100.00

Source: Author's calculation based on data from the Department of Statistics in South Kazakhstan

Based on the results, the increase in the total fertility between 1999 and 2009 was caused by the birth rate factor with 96.82 %, while the age factor was at 2. 11 %, the factor of birth order at 1.26 % and the differences in urban-rural fertility did not turn out to be significant not having shown any effect.

From these findings it is evident that recent fertility growth based on the increase of birth rate as a major in South Kazakhstan as well as in whole country. Almost absence effects of age difference, birth order factor and urban-rural differentiation showed insignificance, especially by place of residence inclining that there is some convergence in urban and rural fertility.

Thorough fertility analysis of South Kazakhstan showed the weight of South reproduction in comparison with selected regions, it development within region due to ethnic differences as well as by marital status revealing that the Turkic ethnic group has higher level of fertility than European one. As for fertility by marital status it was confirmed that marital fertility covers considerable part of total fertility rate especially of mother aged of 25 and above. Extramarital fertility corresponds to young females (first birth) at most.

With purpose to perform a completed analysis of South Kazakhstani fertility, the section of South fertility on the background of residual regions was initiated presenting in this sub-chapter.

6.2.3 South fertility on the background of residual regions

The fertility changed with a rapid decline and then with a significant increase in Kazakhstan as well as in its South Region during the 1990-2000s. This fact took place due to several reasons such as socio-economic development, postponed reproduction in the beginning of the 1990s and its implementation afterwards and significant reproductive realization by young women who were born in the 1980s, the so called "baby boom" generation.

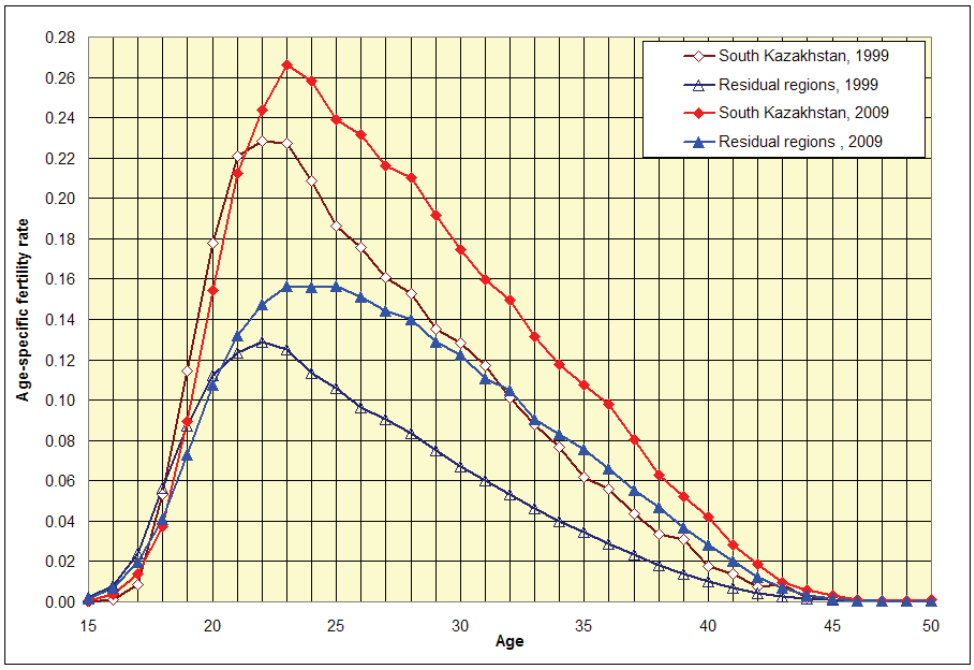
However, due to the differences between regions fertility changes had different effect. South Kazakhstan is considered to be a region with higher fertility level. In order to understand the extent of the fertility in the South compared to Kazakhstan as a whole, it was necessary to make a comparable analysis of reproduction in the South and residual regions (whole Kazakhstan - South Kazakhstan). This comparison has it special point as it has not been analyzed earlier.

The reproductive behavior of people in South Kazakhstan was partially researched by a Kazakhstani demographer (Yessimova, 2005). However, we aim to analyze the extent of the fertility in the South in comparison with residual regions. This analysis is based on the statistical data from 1999 to 2010, 1999 and 2009 years have been chosen for comparative purpose.

During the mentioned decade (1999-2009) the fertility level increased significantly. According to the total fertility rate in the South the TFR increase enhanced from 2.84 live births per woman in 1999 to 3.61 live births per woman in 2009. Residual regions covered 2607,6 thousand square kilometers by territory and had a much lower total fertility rate than South Kazakhstan, though, it has risen from 1.65 live births per woman to 2.43 live births per woman during 1999-2009. This fact showed comparative effect of the reproduction in the South to the whole of Kazakhstan.

Fertility differences between the South and residual regions of Kazakhstan defined from the total fertility rate indicate various reproductive behaviors that could be analyzed through changes in the age-specific fertility rates. From a historical fact Southern Kazakhstani women start their reproduction process earlier and give birth until the age of 40 or in some cases even over. There is an importance to observe changes in fertility quantum within the regional comparison (fig. 49).

Fig. 49: Changes in the age-specific fertility rates, South Kazakhstan and residual regions, between 1999 and 2009



Source: Author's calculation based on data from the Agency of Statistics of Kazakhstan

Due to the increased total fertility rate in the South and residual regions during the researched decade the increase occurred in the age-specific fertility rate as well. But the intensity between the South and residual regions differentiated significantly. Within the youngest reproductive age (15-19 years) the South and residual regions show almost the same fertility development by age, but within the ages over 20 years the fertility quantum during the observed years has increased substantially among South Kazakhstani women.

The reasons of existing difference are based on many factors: historical background of regions, types of regions according to the place of origin, living standards, ethnical representativeness and public opinion. All those factors together, influence reproductive behavior of women living in observed areas.

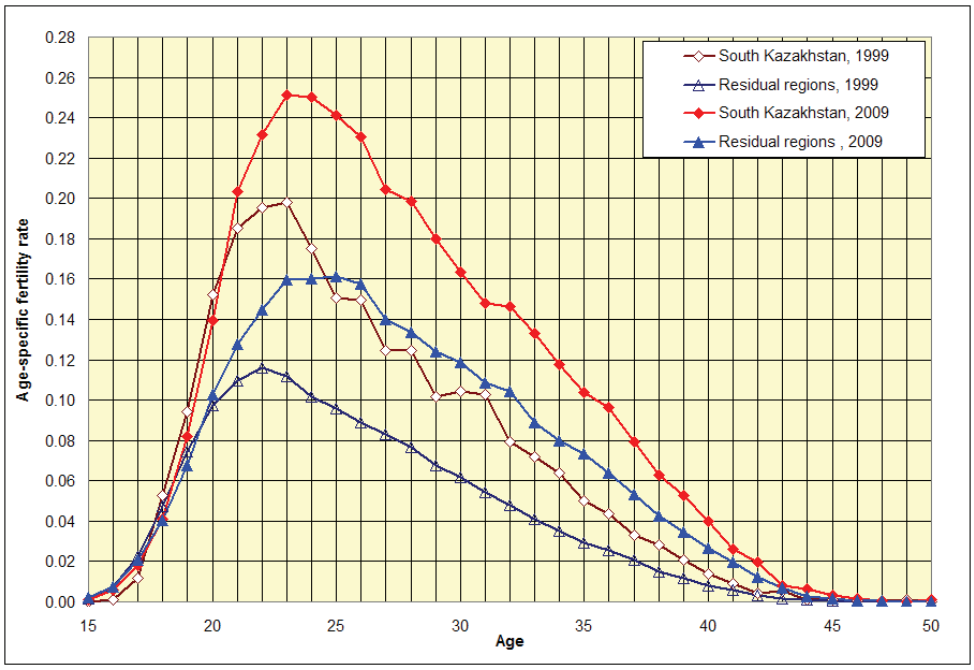
Considering that South Kazakhstan is an agrarian region, there is a major role to analyze the changes in the age-specific fertility rate by the place of residence. Analysis of fertility by the place of residence during the selected years (1999 and 2009) showed the comparable increase in urban fertility from 1999 (2.35) to 2009 (3.49) in South Kazakhstan. On the other hand, there is no comparable increase in rural areas of the South, even though the total fertility remains high (3.20 in 1999 and 3.70 in 2009).

As for the residual regions the increase in fertility levels pertains to both places of residence since it was below replacement level in 1999 and increased slightly higher than replacement level in 2009 (urban: 1.47 in 1999 and 2.39 in 2009; rural: 1.94 in 1999 and 2.49 in 2009).

The presented total fertility rates by the place of residence have once again showed the substantial weight of fertility in South Kazakhstan. This demonstrates the fact that fertility level in Kazakhstan as a whole without the fertility of Southern Kazakhstani women would have had general reproduction of not more than 2.43 children per women.

Due to the differences in the total fertility levels in urban and rural areas within the comparison of the South and residual regions the fertility quantum had the effect by the place of residence as well (fig. 50 and 51).

Fig. 50: Changes in the age-specific fertility rates, urban, South Kazakhstan and residual regions, between 1999 and 2009

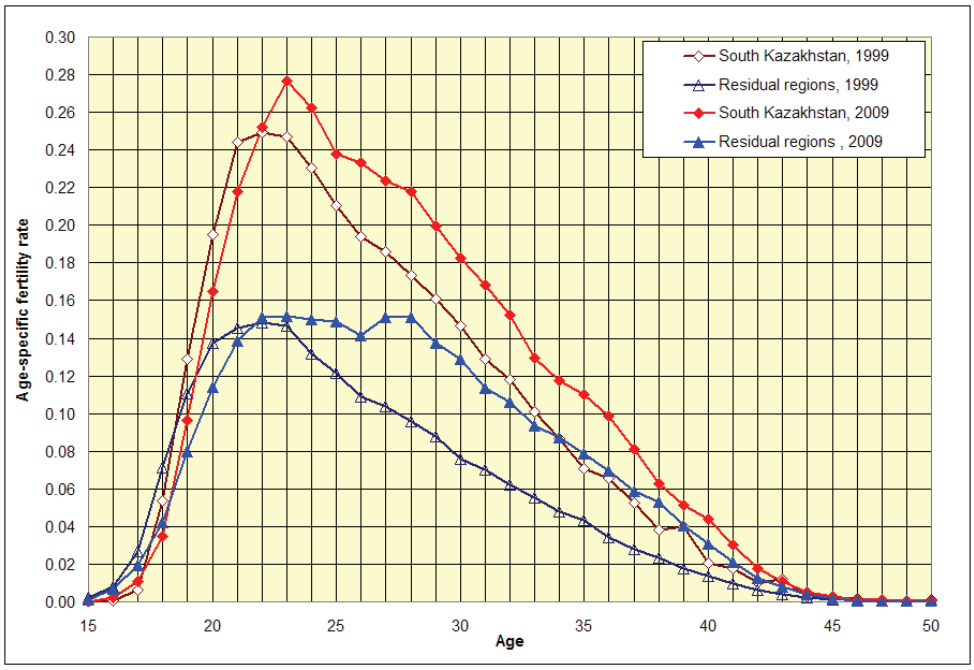


Source: Author's calculation based on data from the Agency of Statistics of Kazakhstan

Analysis of the differences in the fertility quantum in urban reproduction between the South and residual regions showed the highest of intensity related to the age of 22 and 23. However, the effect of intensity is considerably higher in South Kazakhstan and remains to be higher until the latest reproductive age.

With regards to the difference in fertility quantum in the rural areas of observed regions the highest intensity was again related to 22-23 years of age (fig. 51). However, in the late reproductive ages the convergence of fertility intensity occurred between the South and residual regions.

Fig. 51: Changes in the age-specific fertility rates, rural, South Kazakhstan and residual regions, between 1999 and 2009



Source: Author's calculation based on data from the Agency of Statistics of Kazakhstan

More precise analysis of fertility changes between the South and residual regions can be observed hereafter by birth order. During the 1999-2010s the considerable increase occurred in the first birth order (tab. 23). The significant increase in the first birth order took place in 2010 in South Kazakhstan and in 2009 among the residual regions in comparison with the year of 1999.

The comparative analysis of fertility between the South and residual regions is mostly based on the differences between 1999 and 2009, although in the table 23 the following selected years have significance: 2003 was characterized as the first year that showed tangible positive changes in socio-economic respect, in the mid of the 2000s, i.e. the year of 2005 was proclaimed as a year of socio-economic reforms when a program of social reforms was adopted. The years of 2009 and 2010 belong to relative economic stability. Last population census took place in 2009 and the latest official statistical data is available only up to 2010.

Coming back to the question, the second, third and fourth birth orders are slightly higher than their initial levels. Nevertheless, the shift in the third child occurred in residual regions significantly compared to the South. Despite this fact the South presented higher intensity in every birth even in five and more children.

Tab. 23 Total fertility rates in South Kazakhstan and residual regions according to birth order, selected years

	1999	2003	2005	2009	2010
South Kazakhstan					
Total	2.84	2.98	3.21	3.61	3.67
1st order	0.86	0.97	0.98	1.15	1.20
2nd order	0.75	0.71	0.78	0.81	0.78
3rd order	0.60	0.59	0.66	0.68	0.67
4th order	0.38	0.44	0.48	0.52	0.51
5th and over	0.26	0.27	0.31	0.45	0.50
Residual regions					
Total	1.65	1.88	2.05	2.43	2.41
1st order	0.76	0.83	0.89	1.01	0.95
2nd order	0.50	0.58	0.63	0.73	0.73
3rd order	0.23	0.29	0.33	0.41	0.43
4th order	0.10	0.12	0.13	0.18	0.19
5th and over	0.06	0.06	0.06	0.09	0.11

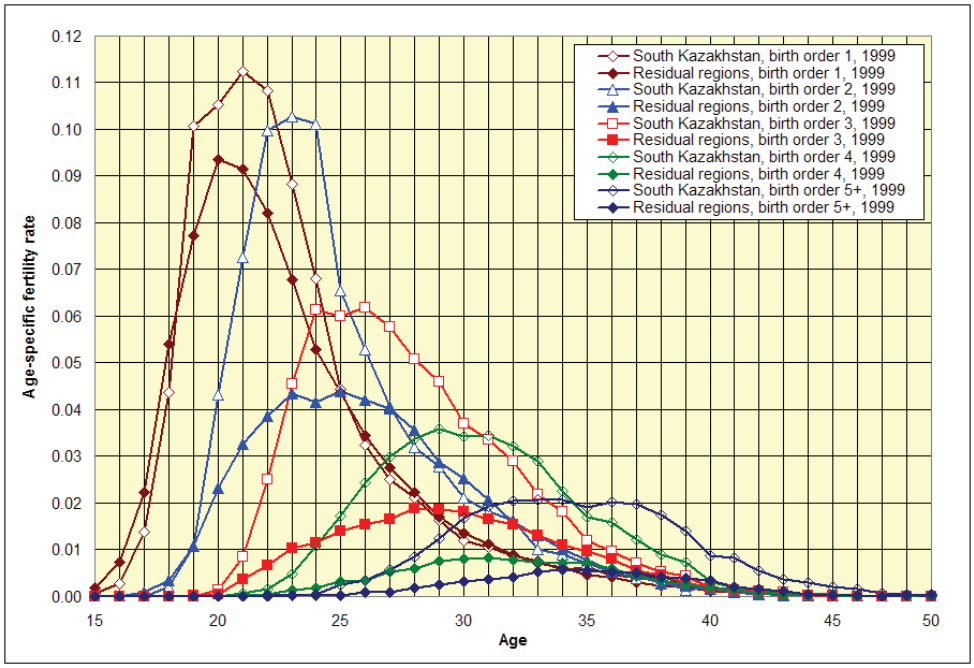
Source: Author's calculation based on data from the Agency of Statistics of Kazakhstan

While considering the differences in birth order-specific fertility rates between the South and residual regions it is essential to compare its age shifting. As mentioned above, changes in the age of mothers have an important influence on reproduction.

Along the observation of fertility by birth order in Kazakhstan it has become evident that the age of mothers, especially in the first order, increased and in later orders it has been moderate since later births directly point out the development of traditional reproduction.

Analysis of the fertility by the birth order confirms that South Kazakhstan is characterized as a region with traditional reproduction. The women from residual regions though mostly rely on the first births (fig. 52).

Fig. 52: Changes in the age-specific fertility rates by birth order in South and residual regions in 1999



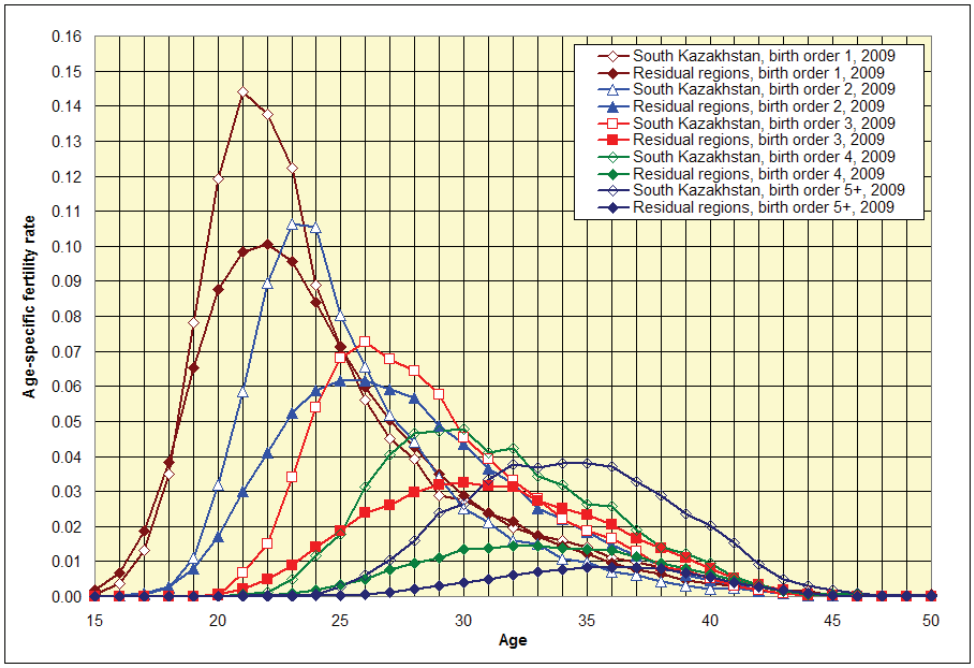
Note: computed from age and birth order specific rates of the second kind

Source: Author's calculation based on data from the Agency of Statistics of Kazakhstan

Special differentiation occurred in the second, third and fourth birth orders since the intensity in South Kazakhstan is much higher in contrast with residual regions. With regard to differences in the age of mothers the first child birth took place earlier with a one year difference in residual regions at age of 20 years. However, there occurred a rejuvenation of fertility among South Kazakhstani women in the later birth orders. For instance, the highest intensity for the third birth appeared in the South among 24 year old women, whereas in residual regions among 28 year olds. Finally, among the fourth child births the highest intensity occurred at the age of 29 in the South and at 30 years in residual regions.

The observed year of 1999 refers to the time of crisis in the country which is one of the reasons why fertility in the high birth order was not significant. Considering this fact it is worth to observe changes in the birth order fertility rates ten years later from that period when socio-economic situation improved considerably (fig. 53).

Fig. 53: Changes in the age-specific fertility rates by birth order in South and residual regions in 2009



Note: computed from age and birth order specific rates of the second kind
Source: Author's calculation based on data from the Agency of Statistics of Kazakhstan

The first birth order in 2009 varied with a considerable extent between the South and residual regions in comparison with the year of 1999. Yet, the second and third birth orders showed a slight fertility increase in 2009, specifically in residual regions due to compensative fertility in the entire Kazakhstan. In spite of that, the fertility level in South Kazakhstan has a significant weight in the reproduction of Kazakhstan as a whole.

Due to major differences between urban and rural life in Kazakhstan and specifically in its South Region it was meaningful to analyze birth order-specific fertility rates by the place of residence. Nowadays, urban women in South Kazakhstan still have three children on average. It is not the case in the Northern and Central parts of Kazakhstan, thus, we ought to observe the influence of urban fertility by birth order.

Tab.24 Total fertility rates in South Kazakhstan and residual regions according to birth order, urban, selected years

	1999	2003	2005	2009	2010
South Kazakhstan					
Total	2.35	2.56	3.13	3.49	3.27
1st order	0.87	1.06	1.17	1.24	1.14
2nd order	0.70	0.65	0.81	0.89	0.81
3rd order	0.46	0.46	0.61	0.67	0.63
4th order	0.22	0.26	0.35	0.43	0.41
5th and over	0.12	0.12	0.19	0.27	0.27
Residual regions					
Total	1.47	1.81	2.05	2.39	2.35
1st order	0.76	0.91	1.00	1.10	1.02
2nd order	0.45	0.57	0.64	0.76	0.77
3rd order	0.17	0.23	0.28	0.36	0.38
4th order	0.06	0.07	0.09	0.12	0.13
5th and over	0.03	0.03	0.04	0.05	0.05

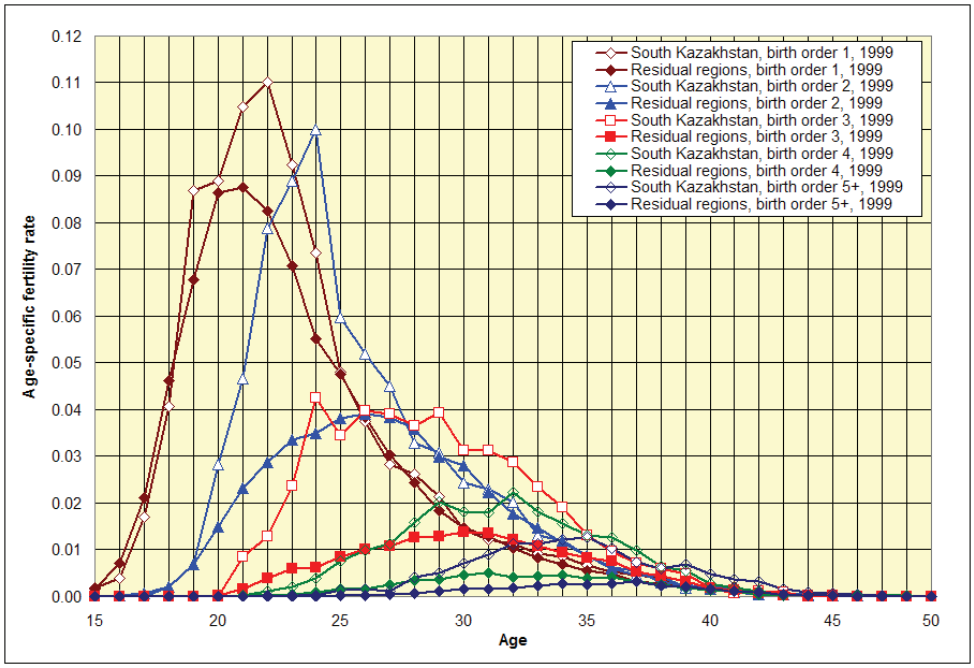
Source: Author's calculation based on data from the Agency of Statistics of Kazakhstan

The total fertility rates in urban areas of the South and residual regions do not differ considerable from the general fertility presented above. Women in urban areas of South Kazakhstan have on average 3.49 children (2009), in residual regions it is roughly 2.39 children.

The increase by birth order-specific fertility rates occurred among the first birth order which was observed both in urban and rural areas of all the regions. The fertility rate of the second order child shows an increase in residual regions that is comparably higher than in the South. However, the increase of the fourth and fifth order children occurred among urban females of the South.

The intensity of fertility by age between the South and residual regions is specified with approximately one year difference. For instance, the highest intensity of the first child is related to 21 year old mother from residual regions and 22 year old from the South. In contrast to the age difference of the first order, the second child is born more often among South Kazakhstani women at the age of 24, whereas among women from residual regions at the age of 26. This fact directly indicates that even if South women start their reproduction later, the interval between children is narrower than among women from residual regions (fig. 54).

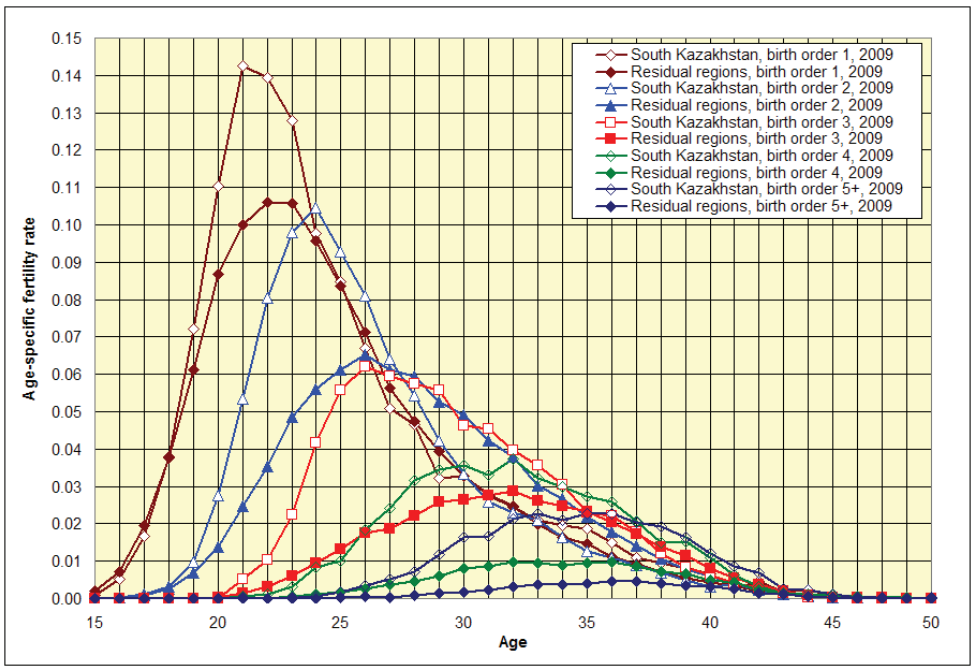
Fig. 54: Changes in the age-specific fertility rates by birth order in urban areas, South and residual regions, 1999



Note: computed from age and birth order specific rates of the second kind

Source: Author's calculation based on data from the Agency of Statistics of Kazakhstan

Fig. 55: Changes in the age-specific fertility rates by birth order in urban areas, South and residual regions, 2009



Note: computed from age and birth order specific rates of the second kind

Source: Author's calculation based on data from the Agency of Statistics of Kazakhstan

In respect to the fertility quantum the mother's age of the second child remained (2009) the same as it was in 1999 in observed regions. With regards to the first order children, South Kazakhstani women showed a shift from the age of 22 to 21, but women from residual regions on the contrary had their fertility ageing move from the age of 21 to 22 years as the highest fertility intensity.

Rural women were expected to have high total fertility levels due to a different lifestyle, and besides the intensity of higher birth order children should be more significant than in urban areas. Considering the same years when analyzing urban and rural birth order fertility we found that there is no substantial increase of rural total fertility rate in South Kazakhstan.

Regarding residual regions the increase takes place as it has at least risen above the replacement level (tab. 25).

Tab. 25 Total fertility rates in South Kazakhstan and residual regions according to birth order, rural, selected years

	1999	**2003**	**2005**	**2009**	**2010**
South Kazakhstan					
Total	3.20	3.30	3.27	3.70	3.97
1st order	0.85	0.91	0.86	1.10	1.25
2nd order	0.79	0.75	0.75	0.75	0.77
3rd order	0.70	0.68	0.69	0.69	0.71
4th order	0.50	0.57	0.57	0.58	0.58
5th and over	0.36	0.38	0.40	0.58	0.67
Residual regions					
Total	1.94	2.00	2.07	2.49	2.52
1st order	0.76	0.71	0.70	0.87	0.85
2nd order	0.57	0.60	0.61	0.68	0.69
3rd order	0.33	0.38	0.43	0.51	0.51
4th order	0.16	0.19	0.21	0.28	0.29
5th and over	0.12	0.11	0.12	0.16	0.19

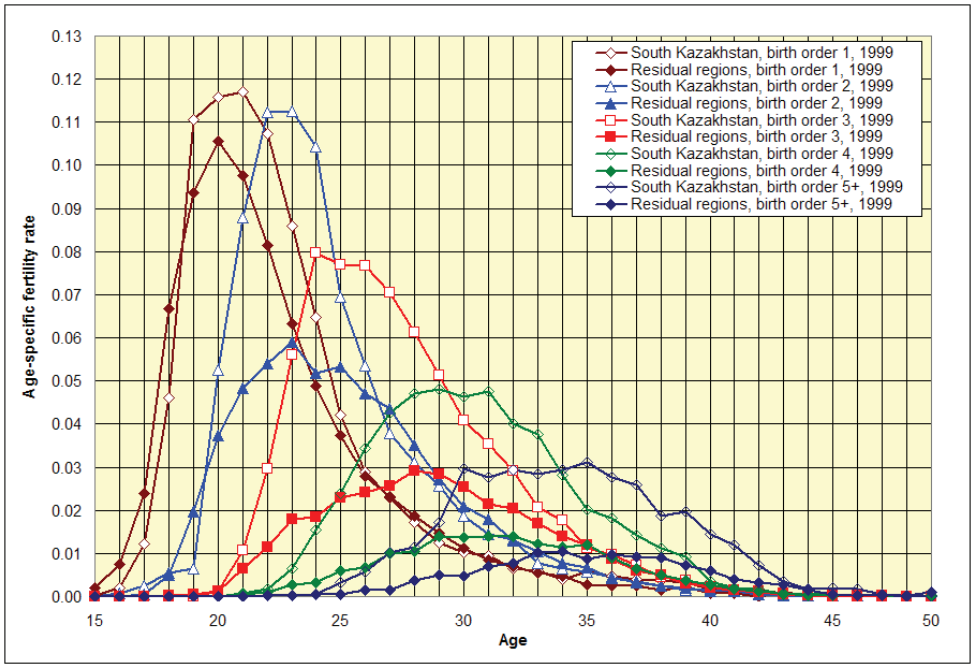
Source: Author's calculation based on data from the Agency of Statistics of Kazakhstan

Due to birth order difference residual regions show small increase in every birth, while in South Kazakhstan it occurred significantly in the first and fifth births. These birth orders proved that the higher fertility took place among women born in the 1980s with their first child and the compensative fertility among older women probably with the youngest child.

In South Kazakhstan, an agrarian region with persistently higher fertility, women, especially in rural areas, used to have many children. These days the reproductive behavior has changed, although still remains relatively high.

The fertility quantum by every birth order in rural area can be observed in figure 56 covering the year of 1999. In both analyzed areas (South Kazakhstan and residual regions) the highest rural fertility intensity occurred in the first birth order. The reproduction of the first birth order started earlier among women from residual regions, while women from South Kazakhstan seem to postpone the first birth but have higher intensity at the age of 21years (fig. 56).

Fig. 56: Changes in the age-specific fertility rates by birth order in rural areas, South and residual regions, 1999



Note: computed from age and birth order specific rates of the second kind

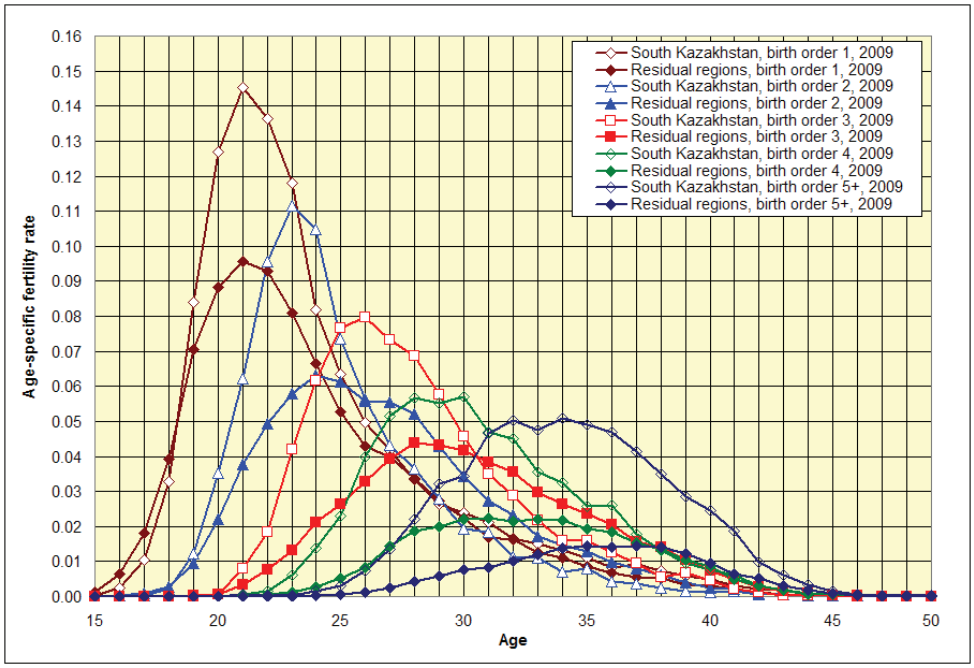
Source: Author's calculation based on data from the Agency of Statistics of Kazakhstan

The fertility intensity of the second order children was relatively low in residual regions in comparison with South Kazakhstan. In the rural areas of the South the intensity of the second order children had almost reached the first order. Due to the age interval there was only a one year difference as most of the second order children were born among mothers at age of 22-23 years.

The third, fourth, fifth and over children are a frequent occurrence in South Kazakhstan, whereas in the residual regions only third child order has a relatively significant weight.

Changes over ten years (1999 - 2009) showed the fertility increase in every birth order in both observed areas (South Kazakhstan and residual regions). It is obvious that fertility increase is more substantial in South Kazakhstan, especially with the fifth child, but when comparing every child order of residual regions it showed a significant increase between 1999 and 2009 years (fig. 56 and 57).

Fig. 57: Changes in the age-specific fertility rates by birth order in rural areas, South and residual regions, 2009



Note: computed from age and birth order specific rates of the second kind

Source: Author's calculation based on data from the Agency of Statistics of Kazakhstan

The structure of birth order fertility between urban and rural areas shows the apparent difference not only among the South and residual regions but by the place of residence as well. For urban women especially from residual regions the fifth birth has become outdated for the most part due to the rare occurrence of it, but it still takes place among the rural women.

While the age-specific fertility rate has been analyzed above we discussed the changes in the age of mothers through the fertility quantum. For this purpose it is necessary to observe the changes in the mean age at childbearing by birth order between South Kazakhstan and residual regions.

From Table 26 it is evident that the mean age at childbearing has increased in general and by first, second and third births in both analyzed areas (South Kazakhstan and residual regions). This fact indicates the fertility ageing that happened as a result of changes in reproductive behavior.

Tab. 26 Mean age at childbearing in South Kazakhstan and residual regions according to birth order, selected years

	1999	2005	2010
South Kazakhstan			
Total	26.99	27.80	28.18
1st order	23.47	24.05	24.86
2nd order	25.46	26.01	26.05
3rd order	28.33	29.22	29.05
4th order	31.24	31.83	31.72
5th and over	35.03	34.86	34.93
Residual regions			
Total	26.39	27.69	28.37
1st order	23.42	24.44	25.13
2nd order	26.79	28.07	28.16
3rd order	30.13	31.66	31.69
4th order	32.45	33.72	33.70
5th and over	35.46	36.15	35.90

Source: Author's calculation based on data from the Agency of Statistics of Kazakhstan

The fourth and fifth child orders did not express significant changes in the mean age at childbearing, but those births did not occur that often any more.

The comparative analysis of fertility between the South and residual regions of Kazakhstan showed substantial weight of South reproduction in the whole country. The latest official statistics for 2010 show that the total fertility rate in the entire Kazakhstan was 2.59 live births per woman, in South Kazakhstan it stood at 3.67 live births per woman and in residual regions it was as low as 2.41 live births per woman. From this estimation it is visible that without South Kazakhstani fertility the total fertility rate in Kazakhstan would not be very much higher than the replacement level.

Also the analysis showed that from 1999 to 2010 the fertility level increased in both observed areas (South Kazakhstan and residual regions). By the place of residence in residual regions the reproduction rose significantly in urban and rural areas. In South Kazakhstan a more considerable fertility increase occurred in urban areas than in rural.

Women from residual regions started their reproduction earlier than South Kazakhstani women. Though, females from South Kazakhstan continue their reproduction process until latest reproductive age.

The substantial increase (1999-2009) took place in the first births for both observed areas (South Kazakhstan and residual regions). However, the higher birth order does not happen intensively in residual regions, but still remains with comparatively higher extent among South Kazakhstani women.

Chapter 7

Reproductive attitudes

Studying reproductive attitude is essential for understanding fertility behavior. According to M. Fishbein and I. Ajzen (Fishbein and Ajzen, 1975) attitudes along with social and individual norms predict intentions and behavior. In this survey labeled as "Reproductive behavior of a family of Kazakhstan" questions of reproductive attitudes and its realization are at special attention. The survey was conducted in 2007 by Kazakhstani social scientist Z. Valitova. The survey based on couples living in North and South Kazakhstan (Chapter 4).

7.1 Reproductive ideals

The subject of reproductive ideals started to be investigated in the late 1930s (Hin, Gauthier, Goldstein and Bühler, 2011). Nowadays, the relevance of the analysis of ideal number of children maintains its necessity since the fertility has decreased considerably in the developed countries as well as the developing. For instance, the gap between reproductive ideals and the real number of children showed the differences in Europe. As published in the European Commission's Green Paper (2005), reproductive ideals averaged at 2.3 children and current reproduction is measured at 1.5 children (Hin, Gauthier, Goldstein and Bühler, 2011). This example points out the importance to analyze the reproductive preference which would most likely not be carried out due to different conditions and obstacles.

The definition of reproductive ideals is based on the ideal number of children that determines the number of children intuitively or sometimes even emotionally. Russian demographers, for instance V.A. Belova has determined it as an indicator which expresses person's views about the optimal number of children per family without considering socio-economic situation and their individual preferences (Belova, 1972). V.A. Borisov has agreed with V.A. Belova but has specified one point in the definition: ideal number of children is the optimal number of children per family, however, not related to own family (Borisov, 1976).

The OECD project has offered to strongly differentiate "general" view of the ideal number of children as optimal and "personal" view when respondents consider ideal number of children with regards to themselves (www.oecd.org/els/social/family/database).

In this survey reproductive ideals were based on personal respondents' views as it makes an importance to investigate the gap between their real and ideal number of children. This gives an opportunity to reveal fertility preferences among couples (couples participated in the survey).

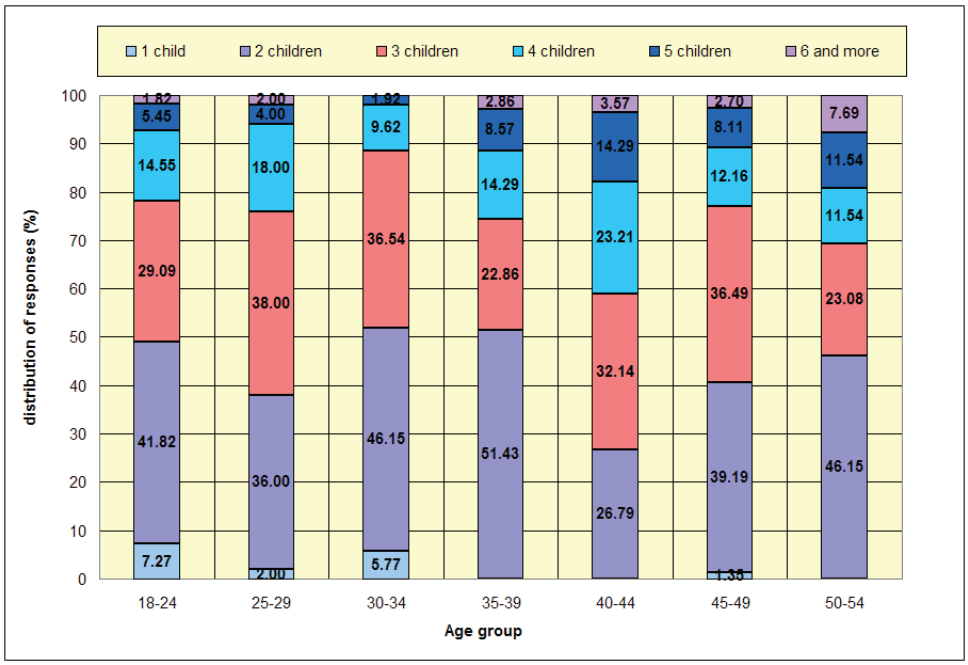
The analysis of reproductive ideals among the couples is presented with contrast between couples living in North and South Kazakhstan due to their apparently different reproductive behavior as it has been identified in Chapter 6.

7.1.1 Ideal number of children among couples from North Kazakhstan

Reproductive ideals among the couples in North Kazakhstan were analyzed in comparison with the selected factors such as age, urban-rural belonging, sex and ethnic differences. These main factors were chosen in order to examine whether there are any differences with regards to distinctive age groups or generations, agreements or disagreements in the ideal number of children according to the sex differences. Furthermore, how would reproductive ideals vary by urban and rural belonging and ethnic differences? Selected factors, except sex, generally, have a considerable discrepancy in reproductive ideals.

When analyzing reproductive ideals according to age differences it was assumed that the ideal number of children would be higher (three and more children) among older respondents due to different scales of values and life priorities. As illustrated in figure 58 the elderly age groups (40-44, 45-49 and 50-54) have attitude towards the ideal number of five, six and more children compared to respondents at younger ages.

Fig. 58: Ideal number of children by age of the respondents (%), North Kazakhstan, 2007,



Note: Statistical significance of total data set p = 0.6873, own calculations

Source: Survey "Reproductive behavior of a family of Kazakhstan", 348 respondents (males and females)

The results of the ideal number of children by age of respondents have shown that the reproductive ideals of two children prevailed in North Kazakhstan. There are only two age groups (25-29 and 40-44) who showed major preference in three children. Both age groups represent different generations living under the different socio-economic conditions. The respondents from the group of 40-44 year olds were born in the regime of socialism when the family had a sustainable power as the main social institute. Hence, their consideration of three children as an ideal derives from the Soviet time values. For instance, from the survey carried out in 1969 in Soviet Kazakhstan, 43.6 % of the females regarded three children as the ideal number (Belova, 1975).

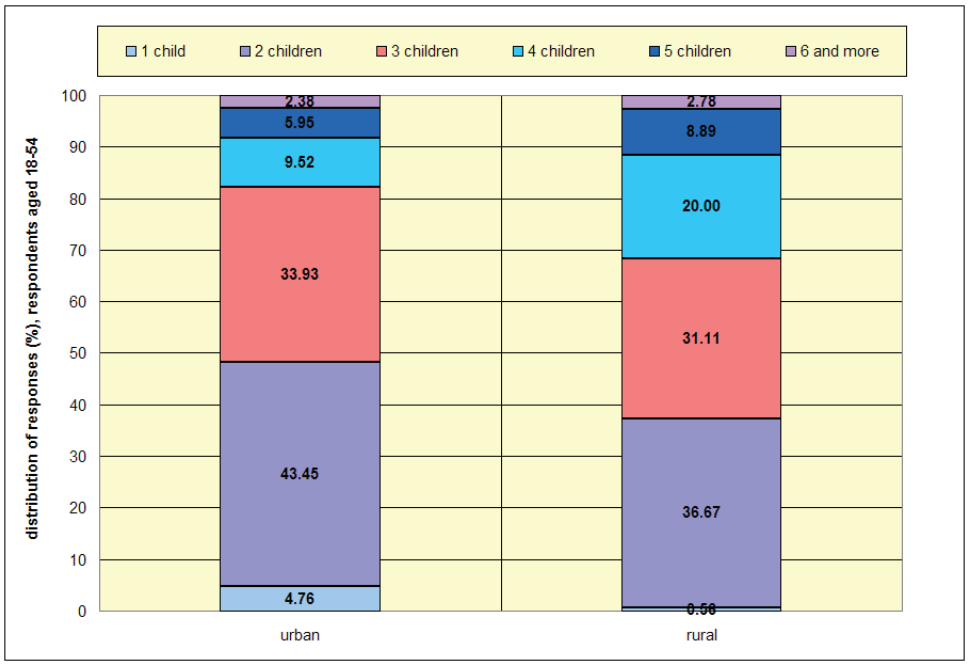
With regards to the respondents from the age group of 25-29, their reproductive ideals are likely based on the ideals of their parents or they have expressed too idealistic views. In both age groups (25-29 and 40-44) the majority of responses are related to three children and the proximate number is two children (fig. 58).

Since the ideal number of children did not differ among the respondents from different age groups to a great extent it has determined the statistical insignificance (0.6873). Although there are some various distributions in percentage, for instance, unlike two youngest groups (15-24 and 25-29) and four older ones (35-39, 40-44, 45-49 and 50-54) the respondents from the age of 30-34 do not consider six and more children as ideal. Furthermore, this group (30-34 years old), compared to other age groups, is less likely to assume four and five children to be ideal.

The comparison of the reproductive idealistic views and current behavior among the couples according to age differences revealed the fertility gap between ideal and real number of children since the mean of reproductive ideals is 2.96 whereas the real number of children is 1.40. This finding indicated the importance of analyzing reproductive ideals which might be useful for decision makers.

Following the structure mentioned above, the next factor estimates the ideal number of children with regards to the differences in urban-rural belonging. This factor is considerably distinguished in reproductive behavior and might be influential in reproductive ideals due to the social environment and life course experience.

Fig. 59: Ideal number of children by the place of residence of the respondents (%), North Kazakhstan, 2007,



Note: Statistical significance of total data set p = 0.0124, own calculations

Source: Survey "Reproductive behavior of a family of Kazakhstan", 348 respondents (males and females)

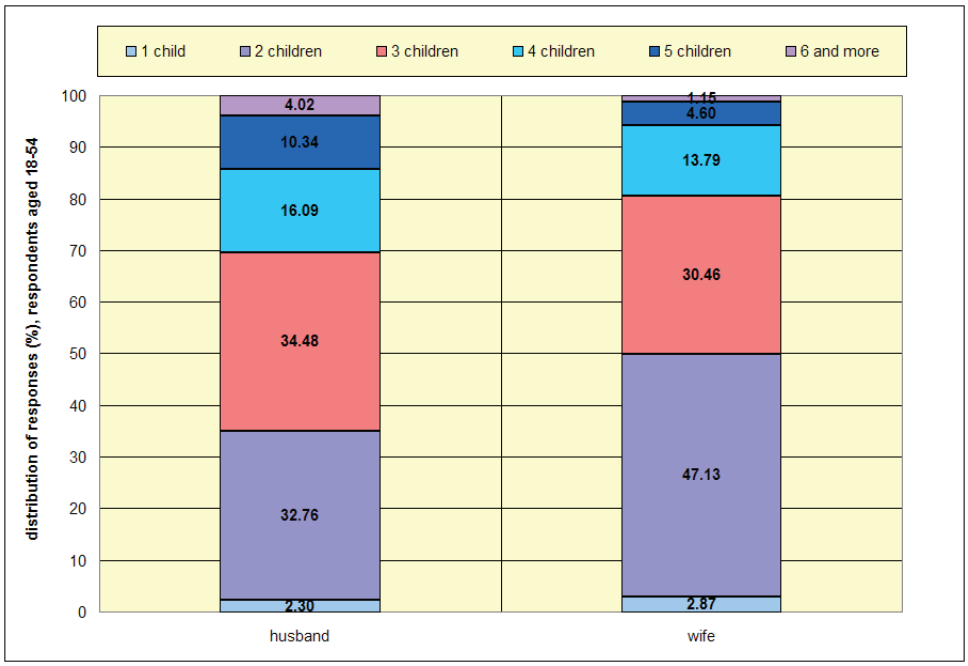
Analyzing reproductive differences relative to urban-rural belonging discernible gap (fig. 59) was found between respondents' opinions of four children which shows that reproductive ideals towards large family maintain among rural inhabitants. The finding implies the statistical significance at 0.0124 points. Nonetheless, the most frequent response was related to two children both in urban and rural areas.

Reproductive ideals according to sex differences are also widely analyzed (Miller and Pasta, 1996) because it is very important to acknowledge the reasons that influence reproductive decisions among the couples. Moreover, it is essential to learn whether couples have agreements or disagreements in their reproductive preferences as, for instance, the survey conducted in Czech

Republic in 2005 showed that females prefer larger number of children than males (Chromková Manea and Fučík, 2011). However, the survey of the whole Europe did not expose any significant differences in reproductive preferences between males and females (Testa, 2006), though, there was some difference in a few European countries separately.

In this survey it was decided to analyze reproductive differences between married males and females in order to find out if they have the same reproductive ideals or they differ (fig. 60).

Fig. 60: Ideal number of children by sex differences of the respondents (%), North Kazakhstan, 2007



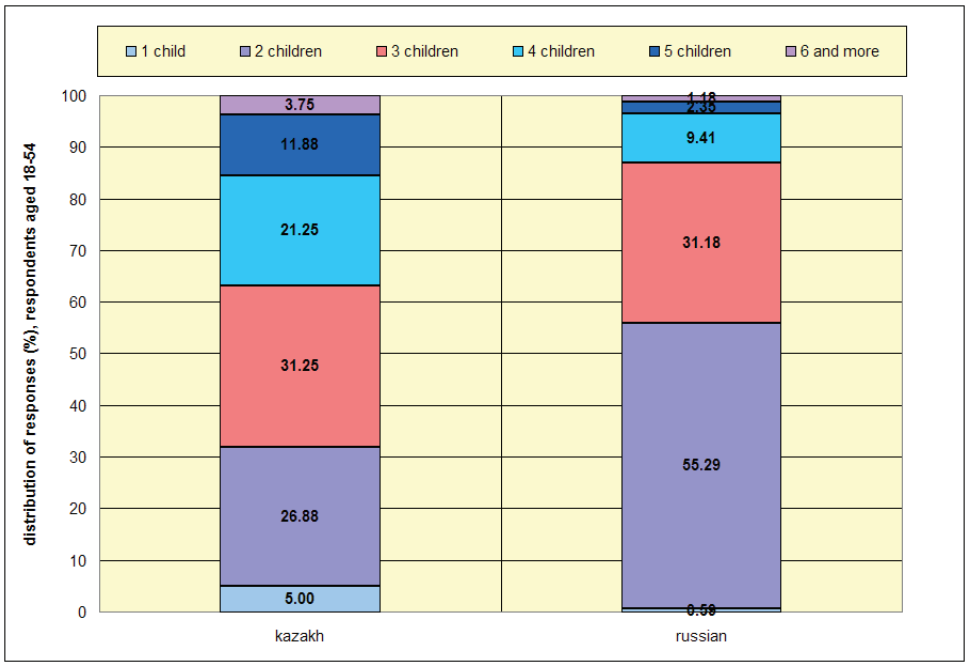
Note: Statistical significance of total data set p = 0.0497, own calculations

Source: Survey "Reproductive behavior of a family of Kazakhstan", 348 respondents (males and females)

In figure 60 it is clearly illustrated that the males have higher reproductive ideals towards large family compared to females. In case of Kazakhstan as well as North Kazakhstan such finding has a logical succession since males there think that questions of reproduction and reproductive health is the responsibility of females (Valitova and Yessimova, 2006), however males would like to have more children. This assertion was proved through the obtained results which showed the level of statistical significance at 0.0497.

Among selected factors the ethnic differences have a substantial importance as current reproduction showed discrepancy in the fertility by ethnicity. Two major ethnicities (Kazakhs and Russians) participated in the surveys since they have considerably different reproductive behaviors. Consequently, it holds a special attention whether they have differences in reproductive ideals as well.

Fig. 61: Ideal number of children by ethnicity of the respondents (%), North Kazakhstan, 2007,



Note: Statistical significance of total data set $p < 0.0001$, own calculations

Source: Survey "Reproductive behavior of a family of Kazakhstan", 348 respondents (males and females)

Obtained results showed the considerable gap in reproductive ideals between the Kazakhs and the Russians. The differences in fertility by ethnicity in Kazakhstan were examined by V. Agadjanian. He specified that the earlier marriages among the Russians have considerably less number of children than the Kazakhs who get married a bit later (Agadjanian, 2008).

The survey results have shown that not only reproductive behavior revealed the differences between the Kazakhs and the Russians where the Kazakhs have large families, but also the ideal number of children differs substantially what has been proved by the statistical significance which is less than 0.0001 points.

Survey results showed that in North Kazakhstan the most common ideal number of children is two. This value exposed that in North Kazakhstan not only reproductive behavior fits to a so-called "European", but also their ideal number of children is 2.96 on average.

The reproductive ideals revealed that even under the conditions of implementing those ideals North Kazakhstan is characterized as the region with "medium" family size.

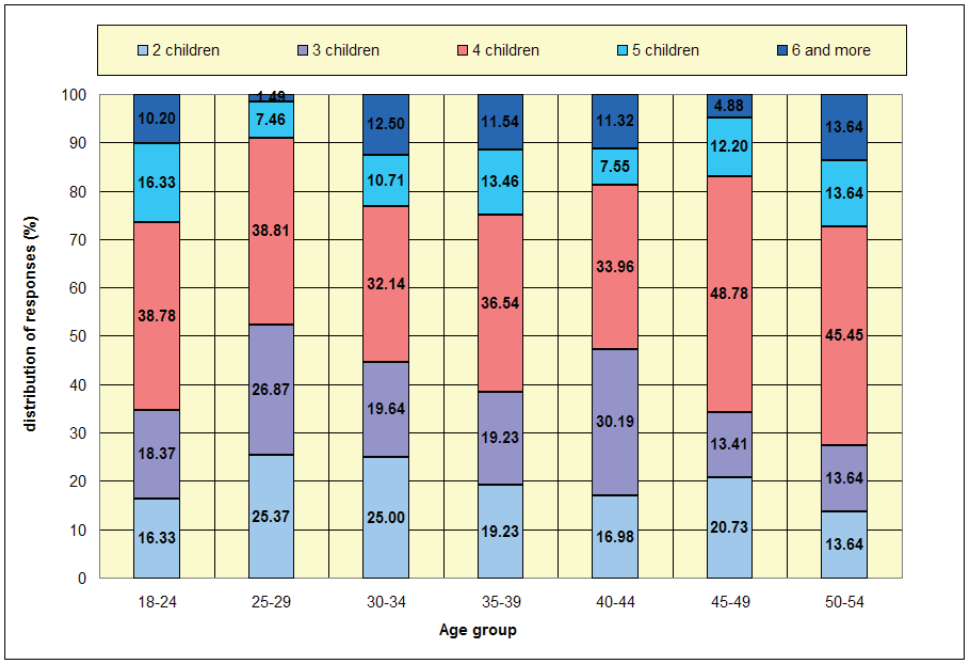
7.1.2 Ideal number of children among couples from South Kazakhstan

It has already been mentioned that South Kazakhstan has the highest fertility level (3.67 in 2010) among all the regions in Kazakhstan. A traditional region with conservative culture, strong values of family ties and as a consequence considerable fertility level, South Kazakhstan posses the interest to examine reproductive ideals among the people living there.

The analysis of the survey has the same structure as the one provided above for North Kazakhstan, therefore, the ideal number of children is observed through the factors such as the differences by age groups, sex, ethnicity and urban-rural belonging.

The results of the analysis of the ideal number of children by age group of respondents showed no significance (0.7939) like in North Kazakhstan. It enables us to infer that the age difference as an independent variable is not significantly important for respondents in identifying reproductive ideals. Four children remain to be the reproductive ideal in each age group (fig. 62).

Fig. 62: Ideal number of children by age of the respondents (%), South Kazakhstan, 2007,



Note: Statistical significance of total data set p = 0.7939, own calculations

Source: Survey "Reproductive behavior of a family of Kazakhstan", 384 respondents (males and females)

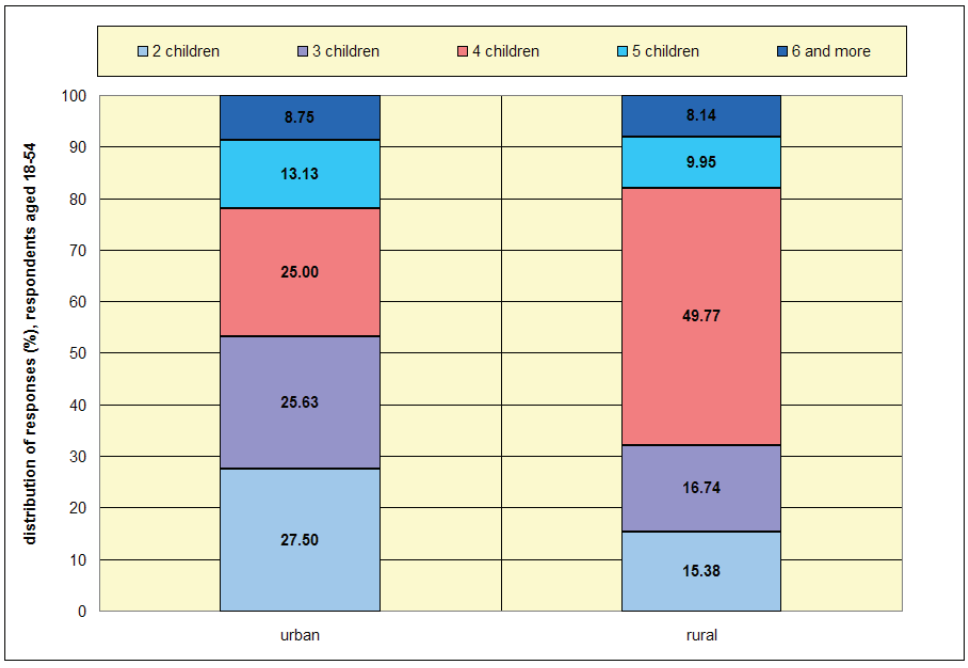
Surprisingly, four children as reproductive ideals was the most common response among two youngest (18-24 and 25-29) and two eldest groups (45-49 and 50-54). These findings are most likely related to the time they were born and their life experience since the two eldest groups were born during the Soviet time and their reproductive values were formed in the period when family, childbearing and childrearing were respectfully valued. This fact may influence their reproductive views through the Soviet values orientation. With respect to the youngest groups of respondents,

they were born after the process of perestroika and started their reproduction in the mid of the 2000s when socio-economic system of independent Kazakhstan was relatively recovered. The reproductive ideals among the youth are most likely related to either their idealistic views or based on their parents' experience. Besides, socio-economic development in the country and the region as well made them assume that four children are ideal. The finding that the youngest generation retains the traditional reproductive ideals by an appropriate type of reproductive behavior is positive despite the fact that the young generations are in the conditions of precise weighing and possible reduction of the planned number of children.

Analyzing the ideal number of children by the age groups we can remark that respondents born in the end of the 1970s and beginning of the 1980s (25-29 years old) have reproductive ideals towards medium family size since slightly more than half of them (52.24 %) chose two and three children as an ideal. The finding shows that the young generations with their modern views aim for medium size families what is probably associated with their reproductive age.

The urban-rural differentiation is widely used in analyzing reproductive preferences, especially in WFS surveys (Kantrow, 1980) and DHS (Ezeh et al. 1996) what is important due to a considerable gap in urban verses rural fertility in developing countries. Inasmuch as the social environment and lifestyle directly or indirectly determine reproductive preferences we assumed that reproductive ideals among rural respondents in South Kazakhstan consider large family to be ideal.

Fig. 63: Ideal number of children by the place of residence of the respondents (%), South Kazakhstan, 2007,



Note: Statistical significance of total data set p = 0.0001, own calculations

Source: Survey "Reproductive behavior of a family of Kazakhstan", 384 respondents (males and females)

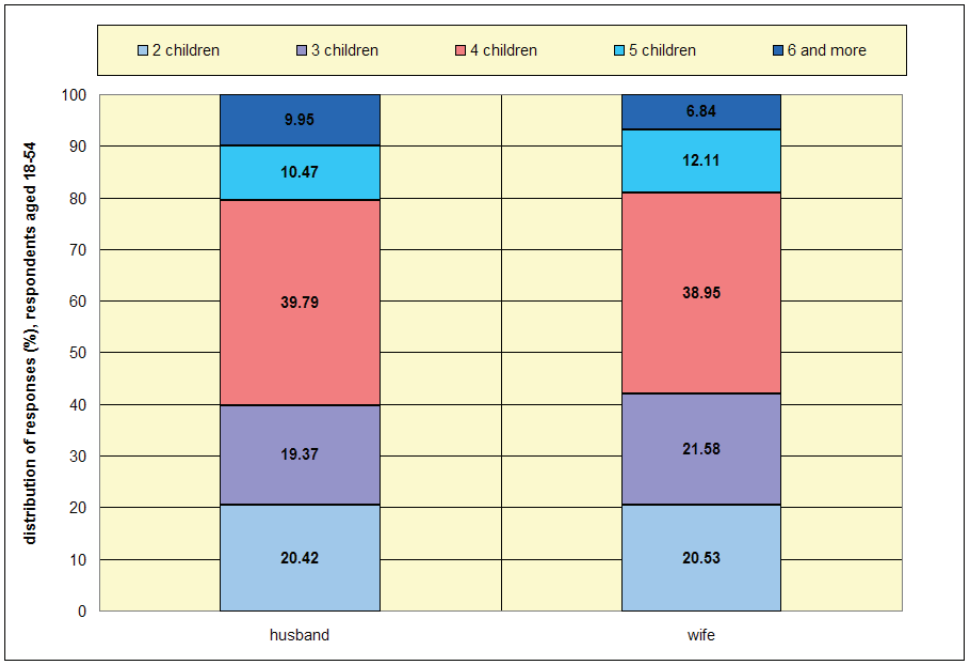
The reproductive ideals by urban-rural distinction resulted in the significance at 0.0001 what determines substantial discrepancy. For the rural respondents unlike for urban natives the ideal number of children is four (49.77 %). Slightly more than half of urban respondents (53.13 %) choose two and three children to be ideal though in urban area the ideal number of children remains higher (four, five, six and more) since for the second half of respondents (46.88 %) the ideals stand to be at more than three children per family. This finding revealed that urban couples are not ready to change their "traditional" reproductive ideals nonetheless, due to lifestyle and circumstances they are changing their reproductive behavior.

An interesting fact is that even rural respondents noted "the urban area is contraindicated for a large family "(respondent, male, 47 years old, Lenger village).

The survey results showed that reproductive ideals differ considerably between urban and rural respondents, though respondents maintain high ideal number of children (four and more) in both observed places.

The next factor to analyze is sex difference. This factor has a lot of attention in surveys and analyses carried out in Europe (Miller and Pasta, 1995) (Thomson, 1997), however, for the researched region of Kazakhstan this survey was the first attempt to examine not only females' but also males' reproductive views.

Fig. 64: Ideal number of children by sex differences of the respondents (%), South Kazakhstan, 2007,



Note: Statistical significance of total data set p = 0.8033, own calculations

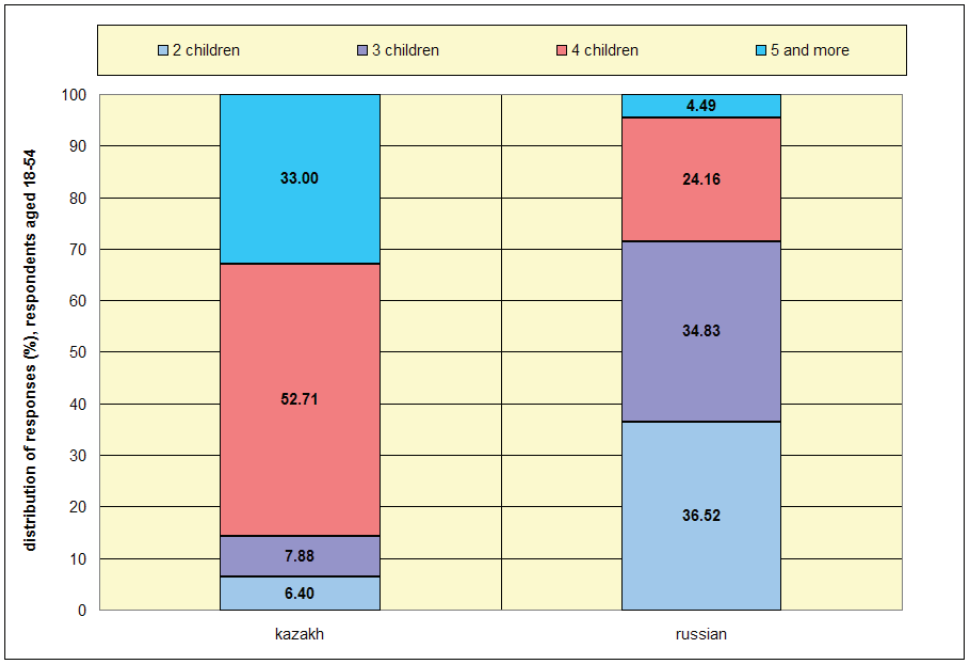
Source: Survey "Reproductive behavior of a family of Kazakhstan", 384 respondents (males and females)

As it is clearly depicted in figure 64 the ideal number of children does not differ by sex as there is no significance (0.8033). Such result is considered to be unexpected since it has been assumed that due to strong gender differentiation based on the traditional and patriarchal families it is associated with reproductive differences in intentions and their implementation. Further, our analysis focuses on reproductive intentions and behaviors based on differences by sex. Though, assuming distinction in reproductive intentions or plans correspondingly we deduced that ideal number of children would differ as well.

The only slight difference was found between husbands' and wives' opinions of six and more children as ideal. Males considered six and more children as the ideal number of children which was slightly higher by percentage (9.95 %) in comparison with females (6.84 %). That may have related to either idealistic view of males (due to not understanding the childbearing process) or to the examples of families they grew in since 30.97 % of respondents grew up in families with six and more children.

The analysis investigated different aspects in reproductive ideals including ethnic difference as an independent factor. Like it has been mentioned above, two ethnic groups (Kazakhs and Russians) whose reproductive behavior differs significantly participated in the survey. This fact enables us to assume that their reproductive ideals would differentiate as well what has been proved in North Kazakhstan.

Fig. 65: Ideal number of children by ethnicity of the respondents (%), South Kazakhstan, 2007,



Note: Statistical significance of total data set $p < 0.0001$, own calculations

Source: Survey "Reproductive behavior of a family of Kazakhstan", 384 respondents (males and females)

With reference to reproductive ideals among the respondents from South Kazakhstan we can confirm that ethnic divergence in the ideal number of children is significant (< 0.0001) (fig. 65).

Analyzing the results of the ideal number of children by ethnic differences it is difficult to mark out the most noteworthy differentiations by birth order. Each birth order in consideration of the ideal number of children differs extensively between the Russians and the Kazakhs what indicates that the reproductive ideals towards large family are higher among the Kazakhs than the Russians.

The analysis of the reproductive ideals in South Kazakhstan has showed that reproductive preferences remain with respect to traditional fertility since mean value of the ideal number of children is 4.47. The age and sex differentiations did not show any significance which enables us to infer that even young generation retains reproductive ideals of conventional South Kazakhstan. Male respondents keep in mind reproductive ideals corresponding to traditional patriarchal type of family.

Lifestyle and social environment between urban and rural inhabitants, Kazakhs and Russians are significantly different what has an influential effect on their reproductive ideals.

Summing up the analysis results of reproductive ideals in South Kazakhstan it has become evident that for the respondents the process of shifting the ideal number of children towards modernized fertility preference is not easy even if the current reproduction shows downward trend in each age group. This finding is positive and important for policymakers who care about the population size in Kazakhstan since it is considered to be an under-populated country.

7.1.3 Effect of ideal number of children among North and South couples

The analysis of reproductive ideals was comprehensively performed by using multinomial logistic regression methods with the dependent variable ideal number of children (1, 2, 3, 4, 5+) and independent variables place of residence (rural, urban), educational attainment (higher, secondary), income (10,000-30,000; 30,001-50,000; 50,001+), religion (Islam, Christianity), gender (husband, wife), ethnicity (Kazakhs, Russians), and narrowed age groups (18-22; 23-27; 28-37; 38-54) (Chapter 4). The results presented step by step started with Model 1 which shows the effect of selected factors within the ideal number of children among couples living in North Kazakhstan (Tab.27) and then in South Kazakhstan (Tab.28).

In table 27, the differences with respect to urban-rural distinguishing indicate that urban couples in North Kazakhstan have 8.0 times higher odds (1/0.125) of assuming one child as an ideal since odds ratio is 0.125 in rural versus urban couples comparison. Their opinion about four children revealed that couples living in rural area determine this reproductive ideal 2.1 times higher than urban couples.

Tab. 27 Impact of residence, education, income, religion, gender, ethnicity, and age on ideal number of children; North Kazakhstan

		Effect	P-value	Odds ratio	Confidence limits	
1st child						
	Residence	Rural vs. Urban	**0.0569**	**0.125**	**0.015**	**1.063**
	Education	College vs. Secondary school	0.7501	1.546	0.106	22.584
		Higher education vs. Secondary school	0.2378	4.514	0.370	55.122
	Income	30,001-50,000 vs. 10,000-30,000	0.9980	0.760	<0.001	>999.999
		50,001 > vs. 10,000-30,000	0.8804	21991.94	<0.001	>999.999
	Religion	Islam vs. Christianity	**0.0050**	**24.997**	**2.636**	**237.016**
	Gender	Wife vs. Husband	0.4703	0.582	0.134	2.527
	Ethnicity	Kazakhs vs. Russians	**0.0077**	**18.213**	**2.151**	**154.177**
	Age	18-22 vs. 38-54	0.0612	9.286	0.901	95.748
		23-27 vs. 38-54	0.5126	2.608	0.148	46.002
		28-37 vs. 38-54	0.2751	3.696	0.353	38.657
3rd child						
	Residence	Rural vs. Urban	0.7728	0.926	0.550	1.560
	Education	College vs. Secondary school	0.1570	1.644	0.826	3.272
		Higher education vs. Secondary school	0.1135	1.811	0.868	3.780
	Income	30,001-50,000 vs. 10,000-30,000	0.9776	1.010	0.505	2.020
		50,001 > vs. 10,000-30,000	0.1775	0.559	0.240	1.302
	Religion	Islam vs. Christianity	0.0748	1.645	0.951	2.846
	Gender	Wife vs. Husband	**0.0507**	**0.595**	**0.354**	**1.001**
	Ethnicity	Kazakhs vs. Russians	**0.0049**	**2.169**	**1.265**	**3.720**
	Age	18-22 vs. 38-54	0.5007	0.757	0.337	1.702
		23-27 vs. 38-54	0.6212	1.210	0.569	2.572
		28-37 vs. 38-54	0.2958	0.715	0.382	1.340
4th child						
	Residence	Rural vs. Urban	**0.0301**	**2.183**	**1.078**	**4.422**
	Education	College vs. Secondary school	0.1581	1.925	0.775	4.782
		Higher education vs. Secondary school	0.1652	1.962	0.757	5.084
	Income	30,001-50,000 vs. 10,000-30,000	0.9699	1.016	0.436	2.369
		50,001 > vs. 10,000-30,000	0.1475	0.446	0.149	1.330
	Religion	Islam vs. Christianity	**<.0001**	**5.145**	**2.530**	**10.465**
	Gender	Wife vs. Husband	0.0666	0.529	0.268	1.045
	Ethnicity	Kazakhs vs. Russians	**<.0001**	**4.605**	**2.262**	**9.374**
	Age	18-22 vs. 38-54	0.8634	0.916	0.339	2.480
		23-27 vs. 38-54	0.9149	0.947	0.349	2.571
		28-37 vs. 38-54	0.1805	0.559	0.239	1.309
5th+						
	Residence	Rural vs. Urban	0.5543	1.284	0.561	2.937
	Education	College vs. Secondary school	**0.0343**	**3.199**	**1.090**	**9.391**
		Higher education vs. Secondary school	0.6767	1.294	0.385	4.345
	Income	30,001-50,000 vs. 10,000-30,000	0.3544	1.579	0.600	4.152
		50,001 > vs. 10,000-30,000	0.4074	0.578	0.158	2.113
	Religion	Islam vs. Christianity	**<.0001**	**8.876**	**3.595**	**21.918**
	Gender	Wife vs. Husband	**0.0020**	**0.258**	**0.109**	**0.608**
	Ethnicity	Kazakhs vs. Russians	**<.0001**	**9.955**	**3.706**	**26.736**
	Age	18-22 vs. 38-54	0.3002	0.513	0.145	1.812
		23-27 vs. 38-54	0.2082	0.414	0.105	1.636
		28-37 vs. 38-54	**0.0278**	**0.291**	**0.097**	**0.874**

Note: multinomial logistic regression, statistical significant results at $p \leq 0.05$ level are presented in bold for each variable and for its respective categories; reference category of the dependent variable is ideal number of 2 children. Source: Survey "Reproductive behavior of a family of Kazakhstan", 348 respondents (males and females), own calculations

The most noteworthy features of the table 27 concern differentiations according to religious affiliation and ethnic belonging. From the table it is evident that the Kazakh couples value higher numbers of the ideal number of children. An interesting fact is that with regards to one child there is the highest differentiation where odds ratio has 18.2 times higher value of assuming this number of children as an ideal among the Kazakh couples versus Russian. Such results revealed that the Kazakhs who live in the Northern part of Kazakhstan prefer an ideal family with one child.

The Kazakh couples when compared to the Russian prefer to have four children with 4.6 times higher and five and more children with 9.9 times higher odds value what is most likely related to their historically formed cultural reproduction pattern.

On the subject of religious affiliation, Muslim families showed higher probability to view large number of children as ideal based on their preferences of four and five children (in four children the odds ratio is 5.1 times higher and in five it is 8.8 times higher). As it has appeared in ethnic differentiation the highest effect of odds ratio assuming one child to be ideal (24.9) occurred among Muslim families in contrast to Christian families. Such results may indicate that couples living in North Kazakhstan (more modernized region with substantial amount of Russian population) regardless of their ethnicity and religious affiliation are changing their reproductive attitudes towards "medium" or even "small" family size.

The interesting finding was related to sex difference. It has become evident that husbands in North Kazakhstan have higher probability to consider three, five and more children compared to their wives. Husbands' assumptions due to odds ratio were 1.6 times (1/0.595; odds ratio equals to 0.595, wife vs. husband) higher with reference to three children compared to their wives' opinions and 3.8 times (1/0.258; odds ratio equals to 0.258, wife vs. husband) higher referring to five and more children. Such distribution is likely related to idealistic males' desires and weighted females' opinions based on comprehension of childbearing process.

There is no much discrepancy in the ideal number of children by the age differences. The only discordance occurred in the ideal number of five and more children when the eldest group (38-54 years old) considered this number as the ideal what was 3.4 times higher (1/0.291; odds ratio equals to 0.291, 28-37 years old vs. 38-54 years old) compared to the 28-37 years old group. Such a result is not surprising since females from the eldest group grew up with Soviet value orientations.

The difference by the level of education was not considerable. Significance occurred between the opinions of respondents with educational degree of college or so-called "professional school" versus respondents who completed secondary school in their ideals of five and more children. The respondents who finished college are more likely to have reproductive ideal of five children than those who completed secondary school by 3.1 times. Such a result is surprising since the relation between fertility preference and educational level generally has the opposite effect (Lesthaeghe, 2002) (Bongaarts, 2003). Considering that there might be two reasonable explanations: the respondents while answering the questions obviously based on their life experience were

fortuitously distributed by educational level in this particular way or the education does not play a significant role.

Summing up the results of multinomial regression model we can indicate that each analyzed independent variable confirmed the assumptions, except for the correlation between reproductive ideals and education as well as family income. When couples are to point out their reproductive ideals their financial income most likely does not play any role.

For the analysis of couples living in South Kazakhstan, the same dependent and independent variables were used for comparative purpose. The first main discrepancy between the regions is related to the absence of the opinion of one child as the ideal among the couples from South Kazakhstan, while it is present among the couples from North Kazakhstan. The second assumption of three children did not show any significance by selected factors which is demonstrated in table 28.

The ideal number of four, five and more children differs considerably, especially by ethnicity and religious views. These factors appeared to be the most substantial in measuring the reproductive attitudes which reveals that familial background and life experience are strong enough to form the respondents' views. For instance, the differences in odds of assuming four children as the ideal number differ by ethnicity being 12.7 times higher among the Kazakhs compared to Russians. This value prevailed in the assumption of five children as the ideal and was 42.9 times higher. That points out how important and significant ethnic factor is in South Kazakhstan. It can be assumed that Muslim families compared to Christian families maintain high reproductive ideals of large family since the results showed that with regards to four children as the ideal number it was 13.2 times higher and with five children 50.2 times higher in favor of Muslim families.

In contrast to findings among couples living in North Kazakhstan where the income did not show any significance, in South Kazakhstan poor families are 2.6 times (1/0.38 odds ratio equals to 0.380 with regards to those who earn 50,001 tenge (national currency) and more vs. 10,000-30,000 tenge) more likely to assume four children as ideal compared to families with considerable income. Thereby for the couples living in South part of Kazakhstan financial position plays an important role since this region is considered less developed compared to the economic situation in North Kazakhstan. It is well known (Caldwell, 1976) that traditional poor societies tend to have higher reproductive preferences.

Tab. 28 Impact of residence, education, income, religion, gender, ethnicity, and age on ideal number of children; South Kazakhstan

		Effect	P-value	Odds ratio	Confidence limits	
3rd child						
	Residence	Rural vs. Urban	0.6812	1.143	0.605	2.158
	Education	College vs. Secondary school	0.2617	1.597	0.705	3.618
		Higher education vs. Secondary school	0.6612	1.195	0.538	2.655
	Income	30,001-50,000 vs. 10,000-30,000	0.1767	0.581	0.264	1.278
		50,001 > vs. 10,000-30,000	0.4781	1.379	0.567	3.351
	Religion	Islam vs. Christianity	0.4714	1.355	0.593	3.096
	Gender	Wife vs. Husband	0.8880	0.955	0.503	1.814
	Ethnicity	Kazakhs vs. Russians	0.5952	1.247	0.552	2.817
	Age	18-22 vs. 38-54	0.7936	1.191	0.322	4.400
		23-27 vs. 38-54	0.6450	1.222	0.521	2.868
		28-37 vs. 38-54	0.5067	0.774	0.364	1.647
4th child						
	Residence	Rural vs. Urban	**0.0002**	**3.504**	**1.830**	**6.708**
	Education	College vs. Secondary school	0.2924	1.464	0.720	2.977
		Higher education vs. Secondary school	0.5732	1.216	0.616	2.401
	Income	30,001-50,000 vs. 10,000-30,000	0.2124	0.662	0.346	1.266
		50,001 > vs. 10,000-30,000	**0.0383**	**0.380**	**0.152**	**0.949**
	Religion	Islam vs. Christianity	**<.0001**	**13.250**	**6.493**	**27.040**
	Gender	Wife vs. Husband	0.8885	0.955	0.504	1.811
	Ethnicity	Kazakhs vs. Russians	**<.0001**	**12.739**	**6.222**	**26.081**
	Age	18-22 vs. 38-54	0.6524	0.731	0.187	2.858
		23-27 vs. 38-54	0.3152	0.642	0.271	1.524
		28-37 vs. 38-54	0.1495	0.578	0.274	1.218
5th+						
	Residence	Rural vs. Urban	0.3070	1.481	0.697	3.145
	Education	College vs. Secondary school	0.5104	1.342	0.559	3.219
		Higher education vs. Secondary school	0.1090	1.929	0.864	4.308
	Income	30,001-50,000 vs. 10,000-30,000	0.1876	0.600	0.281	1.283
		50,001 > vs. 10,000-30,000	0.4792	0.707	0.271	1.847
	Religion	Islam vs. Christianity	**<.0001**	**50.250**	**18.605**	**135.720**
	Gender	Wife vs. Husband	0.6778	0.853	0.402	1.808
	Ethnicity	Kazakhs vs. Russians	**<.0001**	**42.874**	**16.555**	**111.035**
	Age	18-22 vs. 38-54	0.5557	0.607	0.115	3.193
		23-27 vs. 38-54	0.3593	0.624	0.228	1.709
		28-37 vs. 38-54	0.4545	0.716	0.299	1.718

Note: multinomial logistic regression, statistical significant results at $p \leq 0.05$ level are presented in bold for each variable and for its respective categories; reference category of the dependent variable is ideal number of 2 children. Source: Survey "Reproductive behavior of a family of Kazakhstan", 384 respondents (males and females), own calculations

Despite the fact that urban and rural lifestyles differ to a large degree in South Kazakhstan the significance of this factor appeared only in the view of four children as ideal 3.5 times higher in favor of rural couples versus urban.

Among all the observed factors, ethnicity and religious affiliation turned out to have more influence whereas age and sex differences as well as educational level did not show any discrepancies. Such a result is probably related to openness or direct perceptions of respondents

about reproductive ideals so the answers were not quite weighted because it is the ideal number and the respondents are not under pressure to reduce their idealistic reproductive views.

Model 2 (Chapter 4) presented a similar analysis of reproductive ideals with different factors but focused on the effects of the ideal number of children within one model including two (South and North Kazakhstan) regions together. As mentioned above the ideal number of one child was not selected by the couples from South Kazakhstan, therefore the analysis carried out for both regions excluded this category. The approach, steps and sequence as well as reference category (two children, Chapter 4) remain the same.

Evidently the main expectation is related to the differences between the analyzed regions. North Kazakhstan was chosen as a reference category since we aimed to investigate reproductive attitudes of the couples living in South part of Kazakhstan versus North. The assumption consequently implies that the couples from South Kazakhstan are more probably to have reproductive ideals towards large family in contrast to the couples from the North.

The results of the analysis make it evident that South families have higher (three and more children) reproductive ideals than North families (tab. 29). As seen from table 29, in the South the number of couples considering three children as ideal is 1.5 times higher (with four children the number is 7.7 times higher and with five and more children it is 6.7 times higher) than in the North.

Ethnic and religious differences deserve special attention as it appeared in the separate analysis by each region. Four and five children showed the significant effect in favor of Kazakh ethnicity (odds ratio of 9.4 with four children and 26.9 with five and more children). Three children as the ideal number demonstrated only 1.7 times higher odds among Kazakh families. With regards to religious differentiation we can corroborate that this factor influences reproductive attitudes of couples. Muslim families for the most part considered four, five and more children as ideal since odds ratio was 6.7 times higher with four children and 17.2 times higher with respect to five and more children.

Analyzing differences by the place of residence we did not find considerable differentiations, though assumed that reproductive ideals would be higher among rural couples. The assumption was proved only when examining four children as the ideal number because rural families showed 2.8 times higher odds than urban. In terms of three children it has no significance what likely indicates the convergence of reproductive views between urban and rural couples. Families with three children are very common in Kazakhstan.

Tab. 29 Impact of region, residence, education, income, religion, gender, ethnicity, and age on ideal number of children; North and South Kazakhstan

		Effect	P-value	Odds ratio	Confidence limits	
3rd child						
	Region	South vs. North	**0.0497**	**1.536**	**1.001**	**2.357**
	Residence	Rural vs. Urban	0.8957	1.030	0.660	1.609
	Education	College vs. Secondary school	0.0663	1.674	0.966	2.900
		Higher education vs. Secondary school	0.1410	1.541	0.867	2.740
	Income	30,001-50,000 vs. 10,000-30,000	0.2331	0.713	0.409	1.243
		50,001 > vs. 10,000-30,000	0.5893	0.836	0.436	1.602
	Religion	Islam vs. Christianity	0.1363	1.389	0.902	2.139
	Gender	Wife vs. Husband	**0.0451**	**0.629**	**0.399**	**0.990**
	Ethnicity	Kazakhs vs. Russians	**0.0215**	**1.702**	**1.082**	**2.678**
	Age	18-22 vs. 38-54	0.5216	0.807	0.418	1.556
		23-27 vs. 38-54	0.4472	1.239	0.713	2.156
		28-37 vs. 38-54	0.2079	0.739	0.461	1.184
4th child						
	Region	South vs. North	**<.0001**	**7.714**	**4.663**	**12.759**
	Residence	Rural vs. Urban	**<.0001**	**2.823**	**1.704**	**4.678**
	Education	College vs. Secondary school	**0.0166**	**2.093**	**1.143**	**3.831**
		Higher education vs. Secondary school	0.0647	1.818	0.964	3.426
	Income	30,001-50,000 vs. 10,000-30,000	0.5366	1.201	0.671	2.149
		50,001 > vs. 10,000-30,000	0.1161	0.530	0.240	1.170
	Religion	Islam vs. Christianity	**<.0001**	**6.743**	**4.385**	**10.369**
	Gender	Wife vs. Husband	0.0670	0.628	0.382	1.033
	Ethnicity	Kazakhs vs. Russians	**<.0001**	**9.494**	**5.729**	**15.731**
	Age	18-22 vs. 38-54	0.2911	0.704	0.367	1.351
		23-27 vs. 38-54	0.7800	1.081	0.625	1.871
		28-37 vs. 38-54	**0.0536**	**0.631**	**0.396**	**1.007**
5th +						
	Region	South vs. North	**<.0001**	**6.745**	**3.735**	**12.181**
	Residence	Rural vs. Urban	0.3749	1.303	0.726	2.340
	Education	College vs. Secondary school	**0.0455**	**2.119**	**1.015**	**4.425**
		Higher education vs. Secondary school	0.0847	1.942	0.913	4.131
	Income	30,001-50,000 vs. 10,000-30,000	0.8450	1.071	0.538	2.130
		50,001 > vs. 10,000-30,000	0.2232	0.579	0.240	1.396
	Religion	Islam vs. Christianity	**<.0001**	**17.261**	**9.252**	**32.201**
	Gender	Wife vs. Husband	**0.0066**	**0.443**	**0.246**	**0.797**
	Ethnicity	Kazakhs vs. Russians	**<.0001**	**26.944**	**13.447**	**53.986**
	Age	18-22 vs. 38-54	0.0804	0.464	0.196	1.097
		23-27 vs. 38-54	0.5656	0.823	0.423	1.600
		28-37 vs. 38-54	**0.0499**	**0.574**	**0.329**	**1.000**

Note: multinomial logistic regression, statistical significant results at $p \leq 0.05$ level are presented in bold for each variable and for its respective categories; reference category of the dependent variable is ideal number of 2 children. Source: Survey "Reproductive behavior of a family of Kazakhstan", 732 respondents (males and females), own calculations

The age factor does not have a considerable effect in considering three children as ideal, but it differs in four and five children in favor of the eldest age group (38-54 years old) by 1.6 and 1.7 times (odds ratio of 1/0.631=1.6 and 1/.574=1.7) higher respectively. This finding is related to aforementioned value orientation of respondents from the eldest group.

Male respondents showed higher effect of assuming three (1/0.629=1.6 times higher, odds ratio at 0.629, wife versus husband) and five (2.2 times higher, odds ratio at 0.443, wife versus husband)

children as reproductive ideals what is likely influenced by distinctive opinions between couples from North Kazakhstan as it was revealed that couples living in South Kazakhstan have proximate opinions about the ideal number of children. This result indicates that couples have slight disagreements in their reproductive ideals with relation to three and more children what directly specifies the fact that males have higher reproductive ideals than females. That is likely pointing out that not only reproductive ideals but life values among males are more solid and do not change as fast over time.

When considering the ideal number of children we expected that life experience and socialization of the respondents would play an important role with respect to educational attainment but it was not significant since the relation between highly educated couples and those who completed secondary school was not found. The relation between the answers from the respondents with college degree and secondary school diploma is quite interesting. The respondents with college degree (which is one step higher than secondary school) showed the effect of assuming four children as the ideal number 2.0 times higher and five children 2.1 times higher than those with secondary school diploma what does not coincide with the theoretical basis of the second demographic transition but applies to so-called "negative educational gradient" (Sobotka, 2011).

Hence, the analysis showed that for both observed regions the most significant factors are religious affiliation, ethnical belonging and the place of residence with the obvious prevalence of the high ideal number of children among Muslim couples, the Kazakhs and rural inhabitants. Due to the regional differentiation we found that couples from South Kazakhstan are more likely to consider the ideal family with four and five children than couples from the North.

The only independent factor that did not show any significance was family income however it has a reasonable sequence related to idealistic views of the respondents.

7.2 Reproductive preferences

In most of the fertility researches (WFS and DHS) special attention is given to reproductive preferences in contrast to reproductive ideals. There is a direct link from preferences to intentions and then to behavior but in our investigation it was decided to broaden this link with one more step i.e. reproductive ideals in order to complete the picture of reproductive attitudes.

Reproductive preferences have been theoretically analyzed by demographers (Testa, Sobotka and Morgan, 2011) based on Ajzen' TPB models (Ajzen, 1991). His model was not the only theoretical basis in understanding the differences between preferences and behavior. Fertility preferences were analyzed by R. Lesthaeghe to a great extent. He offered RWA model (Lesthaeghe and Vanderhoeft, 2001) which consists of three components like "Ready, Willing and Able" with regards to childbearing.

The above mentioned theoretical basis has indicated that reproductive preference stands to be the first reproductive indicator in measuring reproductive behavior. It is very important to examine

preferences as individuals tend to orient on their desired number of children. Therefore in this sub-chapter we concentrate on reproductive preference or desired number of children that implies the question of how many children the respondents actually want (Hin, Gauthier, Goldstein and Bühler, 2011). This survey was based on the main question of the desired number of children with an additional point stating that if the respondents were to have all affordable conditions they need what would be the desired number of children.

Our aim is to analyze the desired number of children among the couples from South and North regions with reference to different factors in order to entirely examine reproductive preferences in South Kazakhstan.

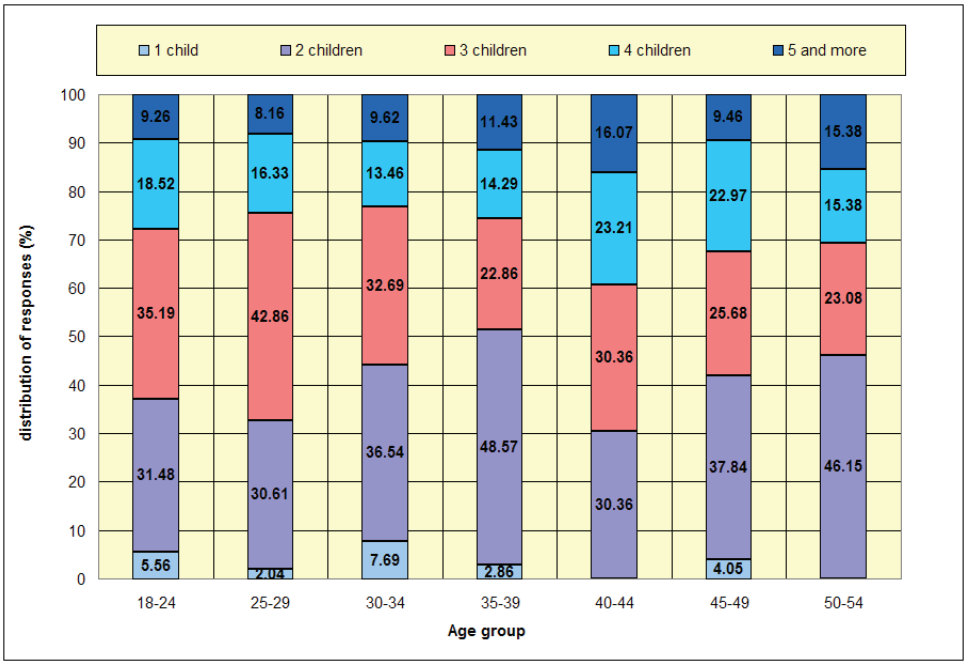
7.2.1 Desired number of children among couples from North Kazakhstan

Considering the desired number of children among couples living in North Kazakhstan we had the expectation of a so-called "medium" family size (two and three children) since the total fertility rate in the region was 1.61 children per woman in the observed year of 2007. Furthermore, the majority of the population in the region is of Russian ethnicity (48.2 %) and it is characterized as urbanized and modernized place as well.

It is well known that all desires including reproductive might be narrowed or expanded due to some circumstances therefore it is worth investigating the particular factors that are significant in relation to the desired number of children. The factors for the descriptive analysis of reproductive preferences were mainly selected according to age differences, urban-rural belonging, sex and ethnicity.

With regard to age differences it was found that reproductive preferences are mostly related to three children among the youth (18-24 and 25-29 years old) (fig. 66), whereas the respondents at the age of 30 to 39 and 45 to 54 desire two children. Among the age group of 40-44 both mentioned numbers of children (two and three) have been distributed among the respondents equally (fig. 66). All in all, age factor did not show any effect in the respondents' reproductive preferences since it was statistically insignificant (0. 6910).

Fig. 66: Desired number of children by age of the respondents (%), North Kazakhstan, 2007,



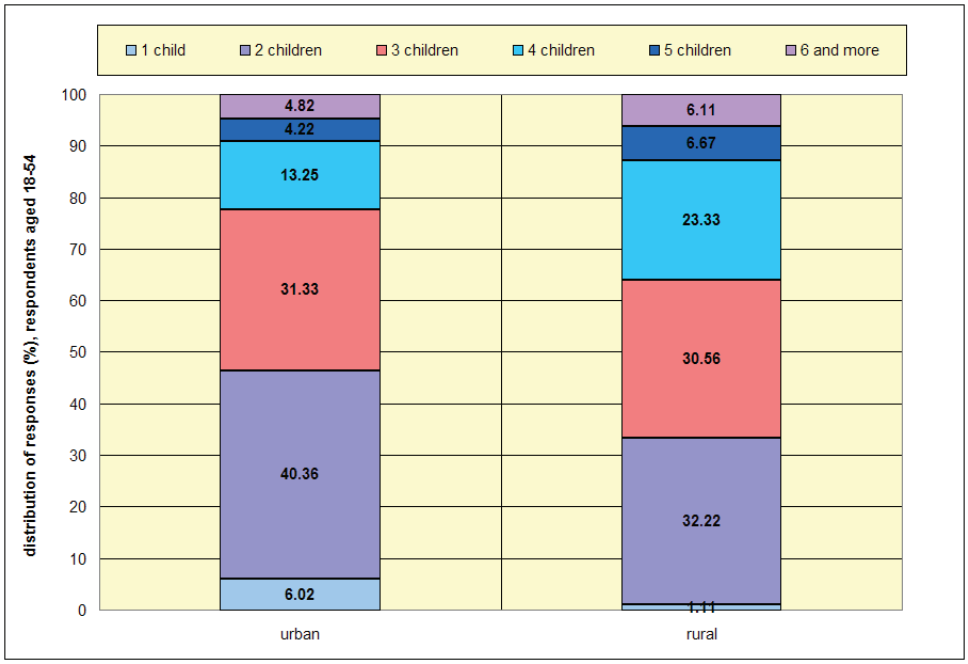
Note: Statistical significance of total data set p = 0.6910, own calculations

Source: Survey "Reproductive behavior of a family of Kazakhstan", 348 respondents (males and females)

As for the differences by the place of residence the level of statistical significance was confirmed at 0.0099 what indicates towards discrepancies between reproductive preferences of urban and rural respondents. It is evident from figure 67 that the main differentiation is related to one and two children in favor of urban respondents (in one by 4.91 % higher and in two by 8.14 % higher). The result ascertains the assumption of "medium" desirable family size among the urban respondents.

Majority of the respondents from rural area as well as urban considered two and three children as the desired number what most likely indicates convergence of opinions regarding that family size. Nevertheless, reproductive preferences in rural area incline towards large family what is proved by the desired four children prevailing among 10.08 % (fig. 67) of rural respondents.

Fig. 67: Desired number of children by the place of residence of the respondents (%), North Kazakhstan, 2007,

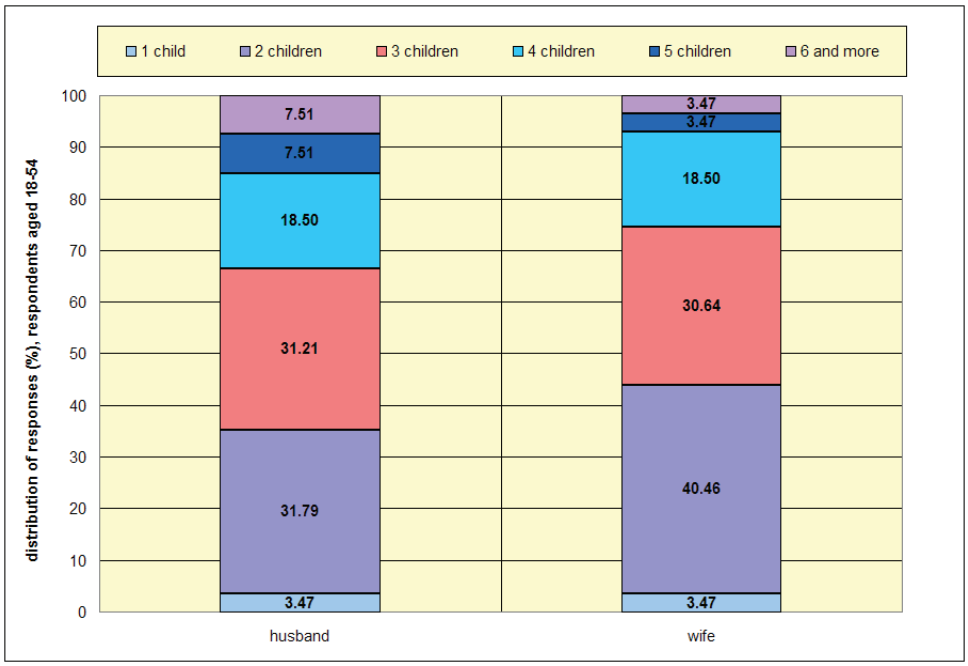


Note: Statistical significance of total data set p = 0.0099, own calculations

Source: Survey "Reproductive behavior of a family of Kazakhstan", 348 respondents (males and females)

Reproductive preferences between husbands and wives did not show discordance when referring to sex differences what was evident from the insignificance (0.5269) (fig. 68). Unlike reproductive ideals (opinions between husbands and wives differed significantly with regards to three and more children) the desired number of children is more related to individual assumption what is probably the reason why husbands were not as optimistic as it occurred with the ideal number of children. The only difference that is worth attention is the fact that the majority of wives chose two children as the desired number prevailing by 8.67 % (fig.68) in contrast to their husbands. This finding indicates that for females from North Kazakhstan a family with two children seems to be the optimal preference.

Fig. 68: Desired number of children by sex differences of the respondents (%), North Kazakhstan, 2007,

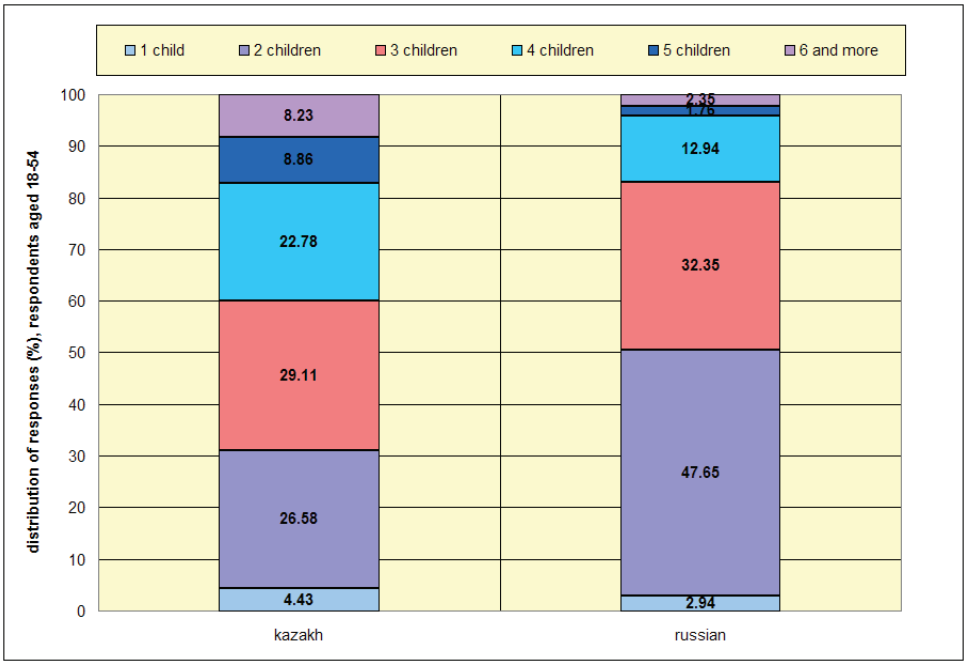


Note: Statistical significance of total data set p = 0.5269, own calculations

Source: Survey "Reproductive behavior of a family of Kazakhstan", 348 respondents (males and females)

Ethnic differences in reproductive ideals were substantial in both observed regions. This factor plays a significant role in reproductive preferences as well what has been determined from statistical significance at 0.0003 (fig. 69). The noteworthy category of the number of children is two which is by 21.07 % (fig. 69) higher among the Russian couples. Kazakh families showed the desire of having four, five, six and more children with a higher intensity expressed by 9.84 % in four, 7.10 % in five and 5.88 % in six and more children (fig. 69) compared to the Russians.

Fig. 69: Desired number of children by ethnicity of the respondents, North Kazakhstan (%), 2007,



Note: Statistical significance of total data set p = 0.0003, own calculations

Source: Survey "Reproductive behavior of a family of Kazakhstan", 348 respondents (males and females)

The analysis of reproductive preferences among the couples living in North Kazakhstan showed that age as a factor does not play significant role since most of the respondents prefer two children on average, though two youngest generations expressed predilection towards three children. Majority of the respondents living in urban area consider two children as the desired number, whereas the answers of the rural couples were almost similarly distributed between two and three children.

Reproductive preferences differ notably by ethnical factor. The Russians mainly incline towards two children as the desired number while the Kazakhs expressed a significant percentage (26.58 %) to have two children as well but they also showed relatively higher desire with regards to four and more children unlike the Russian couples.

The opinions about the desired number of children did not relatively differ between husbands and wives as both prefer to have two to three children while the wives are more inclined to two children.

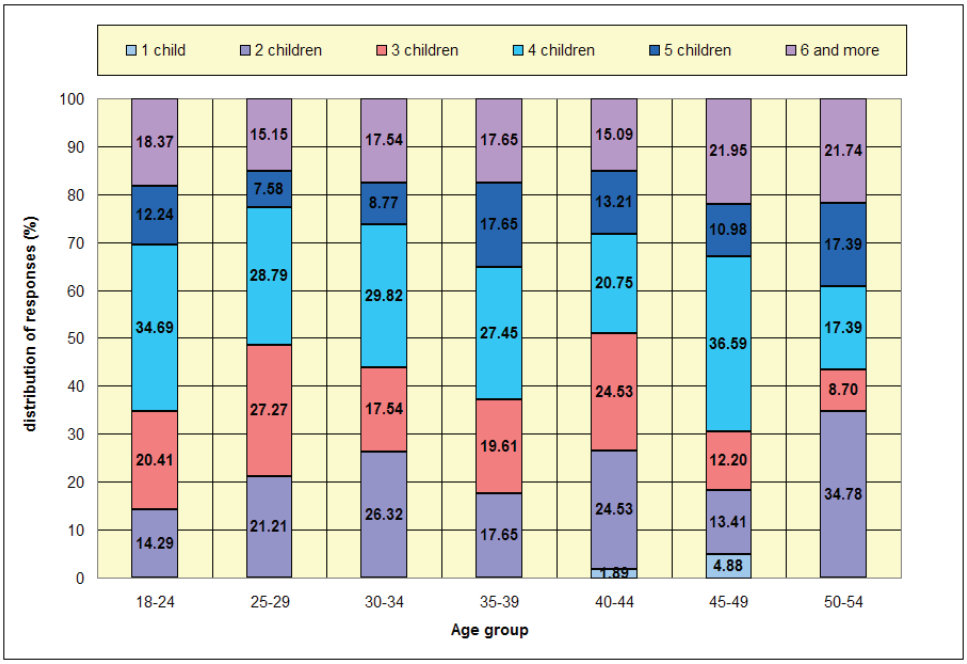
Summing up the obtained results we may conclude that medium size family (two and three children) is a common occasion among the couples living in North Kazakhstan without distinguishing their place of residence.

7.2.2 Desired number of children among couples from South Kazakhstan

From the analysis of South Kazakhstan it has become evident that the region is traditional and conventional in each sphere and consequently in reproductive views as well. Our objective in this descriptive analysis is to reveal reproductive preferences among couples living in South Kazakhstan. Therefore, we try to understand what their desired number of children is and whether it differs from generation to generation, by urban-rural belonging or sex and ethnicity.

Differences by age have generally showed whether the system of value orientation has changed over time as a result of development and modernization. However, if mentality as well as values has not changed it may imply some visual changes but not real. Considering reproductive preferences through age difference in South Kazakhstan it enables us to infer changes over time rather visual than real because the results were insignificant (0.2248) (fig. 70).

Fig. 70: Desired number of children by age of the respondents (%), South Kazakhstan, 2007,



Note: Statistical significance of total data set p = 0.2248, own calculations

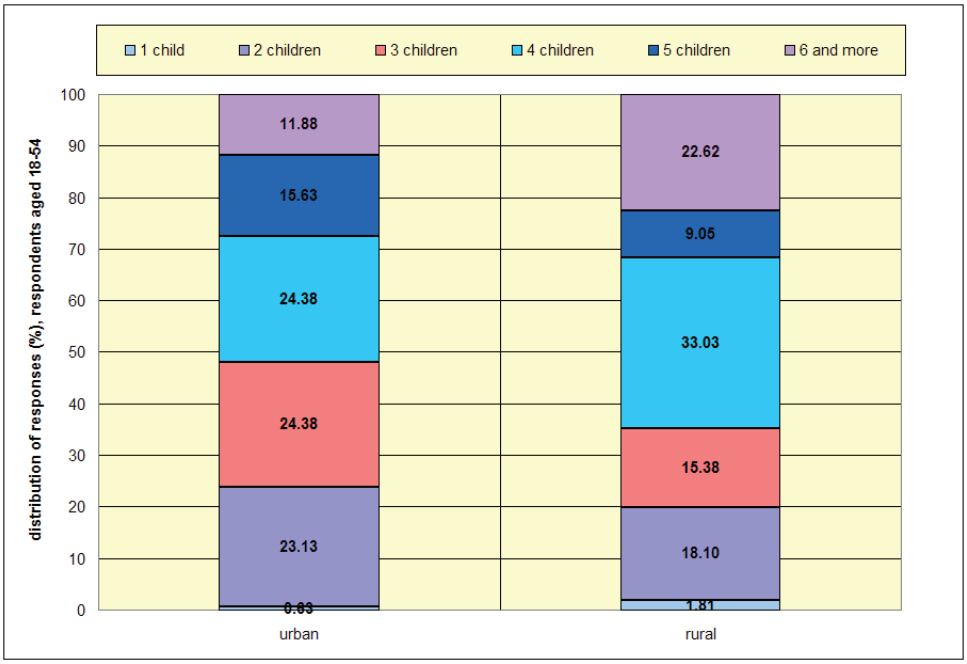
Source: Survey "Reproductive behavior of a family of Kazakhstan", 384 respondents (males and females)

For each age group the most preferred number of children is four, except for the respondents at the age of 40-44 and 50-54 who in the majority considered two children as their reproductive preferences but for the respondents at the age of 40-44 three children was equally preferable as two.

It was expected that couples from South Kazakhstan would prefer four and more children and it was surprising to find out that substantial weight of respondents' answers in each age group was six and more children. This means that not only reproductive ideals but the desired number of children as well are related to antecedent reproductive attitudes.

Reproductive preferences due to the place of residence display sustainable effect of urban-rural differences since the level of statistical significance is 0.0171. That directly indicates the existence of differentiations between urban and rural respondents in their opinions about the desired number of children. As seen in figure 71 the most preferred desired number of children among rural couples is four (33.03 %) whereas urban families showed equality in their desires of three and four children.

Fig. 71: Desired number of children by the place of residence of the respondents (%), South Kazakhstan, 2007,



Note: Statistical significance of total data set p = 0.0171, own calculations

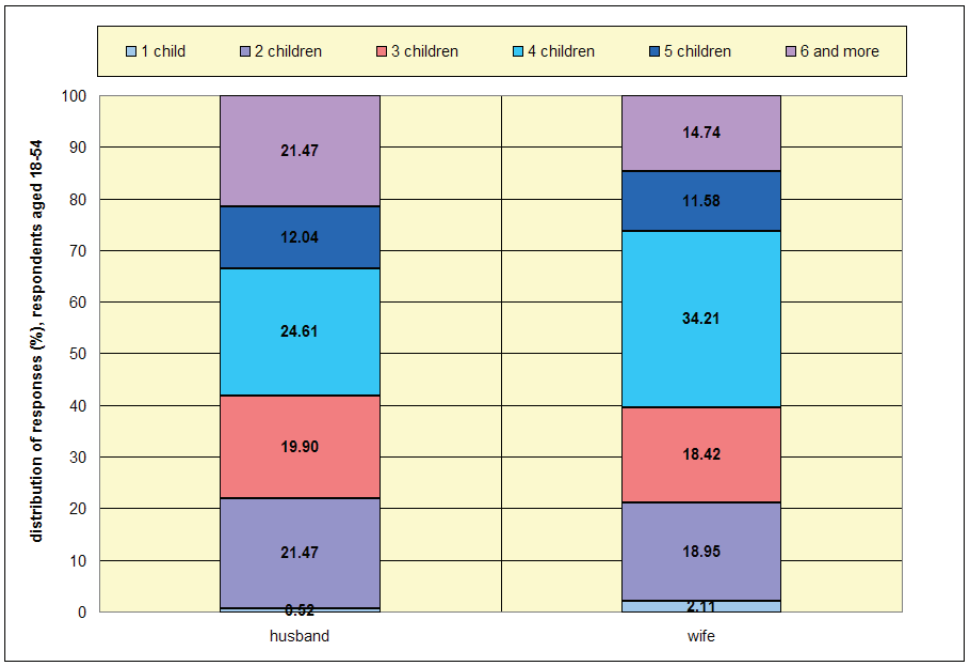
Source: Survey "Reproductive behavior of a family of Kazakhstan", 384 respondents (males and females)

It is interesting that urban couples have chosen five children as the desired number meaning that urban respondents have higher inclination to prefer this number of children than those of rural origin. Such finding is difficult to explain although due to regional characteristics and urban-rural belonging, it has been expected that rural inhabitants desire larger families with relation to their lifestyles. The only reasonable argument for such a result is related to the feature of South Kazakhstan as a more rural region, therefore the link between urban and rural areas is very prominent. As noted by the Kazakhstani scholar Z. Valitova determining South Kazakhstan lifestyle "The body resides in the urban part, but the soul lives in the rural" (Valitova, 2010).

The result of six and more children showed considerable differentiation (by 10.74 %) between urban and rural couples in favor of rural respondents.

In the subsequent consideration of reproductive preferences sex differentiation took a special attention. The result showed statistical insignificance (0.3097) what identifies almost no difference between the responses of husbands and wives (fig. 72).

Fig. 72: Desired number of children by sex differences of the respondents (%), South Kazakhstan, 2007,



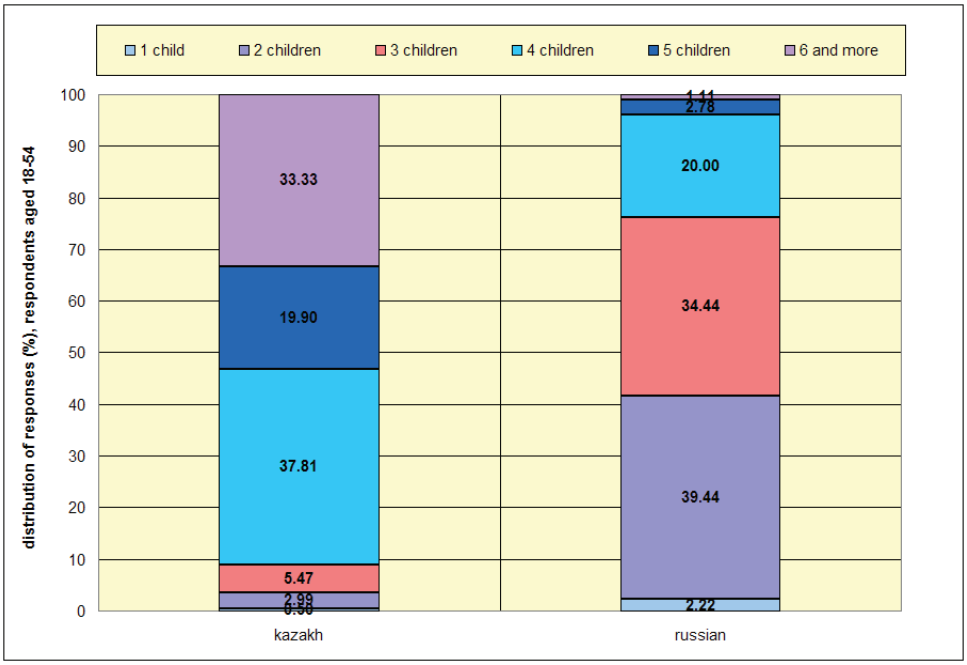
Note: Statistical significance of total data set p = 0.3097, own calculations

Source: Survey "Reproductive behavior of a family of Kazakhstan", 384 respondents (males and females)

In two categories including four and six and more children reproductive views between husbands and wives differ to some extent. For instance, the number of wives considering four children as a desired number is 9.6 % higher while husbands are by 6.73 % more optimistic in their desires of six and more children.

With regards to ethnic differentiation we can note that this factor is considerable because the level of significance was determined at less than 0.0001. It is also evident from the percentage distribution that the number of the Russians desiring two children is higher with 39.44 % whereas the number of the Kazakhs is 2.99 % (fig. 73).

Fig. 73: Desired number of children by ethnicity of the respondents (%), South Kazakhstan, 2007,



Note: Statistical significance of total data set $p < 0.0001$, own calculations

Source: Survey "Reproductive behavior of a family of Kazakhstan", 384 respondents (males and females)

The outcome for the Kazakhs is as follows: the most preferred number of children is four and six. The Russians give their favor to two and somewhat to three children in the family.

The overall analysis of reproductive preferences among couples living in South Kazakhstan has revealed that age factor did not show discrepancies between young and old generations. Urban-rural differences are very important as it was found that rural respondents maintain preferences of large families. According to sex differentiation, the effect was not exuding as husbands and wives have more or less similar views of the desired number of children. Ethnic component showed its significance the way it occurred with reproductive ideals.

7.2.3 Effect of desired number of children among North and South couples

Reproductive preferences are considered as one of the main categories related to reproductive realization of couples or individuals. Therefore it is worth to thoroughly analyze the effects of the desired number of children what was done by using multinomial regression models with a set of independent variables such as place of residence, educational attainment, family income, religious affiliation, sex difference, ethnicity and age of the respondents.

Using this method in order to analyze the desired number of children for two (North and South) regions separately (in Model 1) as well as to observe them together (in Model 2) we selected the category of two children as a reference (Chapter 4).

From the descriptive analysis presented above it became evident that urban-rural differentiation in North Kazakhstan plays a significant role. Multinomial logistic regression method showed that the significance was mostly covered by preferences considering one and four children as desired (tab. 30). Since odds ratio of assuming one child is 0.220 (1/0.220 = 4.5)with rural versus urban effect which means that urban respondents deem this family size as desired 4.5 times higher than rural do. Rural couples on their turn consider four children as the desired number because odds ratio is 1.8 times higher than that of urban couples (tab. 30).

Tab. 30 Impact of residence, education, income, religion, gender, ethnicity, and age on desired number of children; North Kazakhstan

		Effect	P-value	Odds ratio	Confidence limits	
1st child						
	Residence	Rural vs. Urban	**0.0588**	**0.220**	**0.046**	**1.058**
	Education	College vs. Secondary school	0.9795	1.025	0.153	6.873
		Higher education vs. Secondary school	0.3222	2.559	0.398	16.451
	Income	30,001-50,000 vs. 10,000-30,000	0.8275	1.372	0.080	23.564
		50,001 > vs. 10,000-30,000	0.1525	5.467	0.534	56.021
		No income vs. 10,000-30,000	**0.0448**	**11.209**	**1.058**	**118.737**
		Difficult to answer vs. 10,000-30,000	**0.0063**	**32.242**	**2.663**	**390.423**
	Religion	Islam vs. Christianity	0.0709	3.278	0.904	11.889
	Gender	Wife vs. Husband	0.4637	0.631	0.184	2.164
	Ethnicity	Kazakhs vs. Russians	0.0867	2.933	0.856	10.049
	Age	18-22 vs. 38-54	0.1302	3.870	0.671	22.330
		23-27 vs. 38-54	0.9172	1.133	0.108	11.839
		28-37 vs. 38-54	0.2177	2.586	0.571	11.716
3rd child						
	Residence	Rural vs. Urban	0.6435	1.134	0.666	1.929
	Education	College vs. Secondary school	0.3493	1.415	0.684	2.924
		Higher education vs. Secondary school	**0.0195**	**2.482**	**1.158**	**5.322**
	Income	30,001-50,000 vs. 10,000-30,000	0.4749	0.771	0.378	1.574
		50,001 > vs. 10,000-30,000	0.0655	0.452	0.194	1.052
	Religion	Islam vs. Christianity	0.3476	1.310	0.746	2.301
	Gender	Wife vs. Husband	0.2405	0.727	0.427	1.238
	Ethnicity	Kazakhs vs. Russians	0.0943	1.597	0.923	2.763
	Age	18-22 vs. 38-54	0.2493	1.617	0.714	3.660
		23-27 vs. 38-54	0.0890	1.945	0.903	4.186
		28-37 vs. 38-54	0.9404	0.976	0.510	1.865
4th child						
	Residence	Rural vs. Urban	**0.0583**	**1.870**	**0.978**	**3.577**
	Education	College vs. Secondary school	0.1353	1.848	0.825	4.137
		Higher education vs. Secondary school	0.7622	1.153	0.458	2.903
	Income	30,001-50,000 vs. 10,000-30,000	0.8242	0.914	0.415	2.014
		50,001 > vs. 10,000-30,000	**0.0531**	**0.331**	**0.108**	**1.015**
	Religion	Islam vs. Christianity	**0.0004**	**3.228**	**1.688**	**6.172**
	Gender	Wife vs. Husband	0.3534	0.741	0.394	1.395
	Ethnicity	Kazakhs vs. Russians	**0.0009**	**3.042**	**1.577**	**5.869**
	Age	18-22 vs. 38-54	0.7061	1.199	0.467	3.081
		23-27 vs. 38-54	0.6214	0.774	0.281	2.137
		28-37 vs. 38-54	0.2118	0.605	0.275	1.331

Tab. 30 Impact of residence, education, income, religion, gender, ethnicity, and age on desired number of children; North Kazakhstan… continue

5th +						
	Residence	Rural vs. Urban	0.3830	1.422	0.645	3.133
	Education	College vs. Secondary school	0.4321	1.480	0.557	3.934
		Higher education vs. Secondary school	0.8677	0.911	0.303	2.736
	Income	30,001-50,000 vs. 10,000-30,000	0.4593	1.437	0.550	3.757
		50,001 > vs. 10,000-30,000	0.4324	0.611	0.179	2.088
	Religion	Islam vs. Christianity	**<.0001**	**6.331**	**2.675**	**14.986**
	Gender	Wife vs. Husband	**0.0081**	**0.335**	**0.149**	**0.753**
	Ethnicity	Kazakhs vs. Russians	**<.0001**	**7.562**	**3.002**	**19.044**
	Age	18-22 vs. 38-54	0.8751	1.101	0.330	3.673
		23-27 vs. 38-54	0.7262	0.798	0.225	2.824
		28-37 vs. 38-54	0.5843	0.769	0.300	1.971

Note: multinomial logistic regression, statistical significant results at $p \leq 0.05$ level are presented in bold for each variable and for its respective categories; reference category of the dependent variable is desired number of 2 children. Source: Survey "Reproductive behavior of a family of Kazakhstan", 348 respondents (males and females), own calculations

For the categories of one and four children as desired not only the place of residence of the respondents but also family monthly income shows an importance. For instance, the respondents who found the question about their monthly income as difficult to answer and those who specified that they do not have their own money constituted 32.2 (hard to answer) and 11.2 (no income) times higher odds of considering the desired number of one child versus those who earn a minimum wage according to official standards (tab. 30). The respondents with a minimum income desired four children 3.0 times higher (odds ratio is 1/0.331 =3.0, 50,001 and above national currency (tenge) vs. 10,000-30,000 tenge) compared to so-called "rich" families what logically links to theory of fertility by J.C. Caldwell "Intergenerational wealth flows" (Caldwell, 1976).

Regarding educational attainment there was no significance in the birth orders, except for the three children. The respondents who graduated from the university prefer three children 2.4 times higher than those who completed secondary school. Since there was no significance in the rest of the birth orders it is difficult to predict whether the respondents with secondary school education have considerable desires of having four and more children. Nevertheless, the result of the amount of the respondents considering three children as desired number showed that highly educated respondents of North Kazakhstan are likely to prefer "medium" family size.

Ethnic factor as well as religious affiliation play substantial role what has been found out from the preceding analysis and its effect is related to four, five and more children. The result proved the assumption that Kazakh families are more likely to desire four and more children than Russian families, consequently, Muslims desire large family to a greater extent than Christians. It has been confirmed from the odds ratio differences that Kazakh couples consider four and more children 3.0 (four children) and 7.5 times higher (five children). Approximately similar distribution in odds of desiring four (3.2) and five (6.3) children occurred with regards to religious factor in favor of Kazakh Muslim families.

The effect of age factor was not found what indicates that reproductive preferences are relatively similar among four age groups observed. As for the differences in sex we can note that males are more optimistic to desire five children (2.9 times higher odds) than females (1/0.335 = 2.9; 0.335 odds, wife versus husband).

Overall findings showed that each of the selected factors play an important role in respondents' views (couples from North Kazakhstan) regarding their reproductive preferences, except for age factor.

The same way reproductive preferences were analyzed among couples living in South Kazakhstan, following the structure proposed in Chapter 4. It was aimed to examine the influential effect on reproductive views of the desired number of children among the respondents.

Based on the obtained results we can confirm that for the respondents of South Kazakhstan the most significant factors are ethnicity and religious affiliation. Expectations were corroborated by statistical significance level and consequently odds ratio value. For instance, odds ratio of Kazakh couples compared to Russians are 25.3 times higher in assuming four children. With regard to reproductive preference of five children the value is higher by 192.6 times among Kazakhs versus Russians.

In the analysis of the religious factor the proposed hypothesis was confirmed as the odds ratio of four and five children as the desired number is 12.4 and 40.0 times higher respectively among Muslims in contrast to Christians (tab. 31).

Tab. 31 Impact of residence, education, income, religion, gender, ethnicity, and age on desired number of children; South Kazakhstan

		Effect	P-value	Odds ratio	Confidence limits	
1st child						
	Residence	Rural vs. Urban	0.2516	3.699	0.395	34.620
	Education	College vs. Secondary school	0.7070	1.435	0.218	9.424
		Higher education vs. Secondary school	0.8821	0.000	<0.001	>999.999
	Income	30,001-50,000 vs. 10,000-30,000	0.8233	0.793	0.104	6.069
		50,001 > vs. 10,000-30,000	0.9734	0.958	0.079	11.673
	Religion	Islam vs. Christianity	0.4498	2.251	0.275	18.450
	Gender	Wife vs. Husband	0.0970	6.831	0.706	66.094
	Ethnicity	Kazakhs vs. Russians	0.2221	4.493	0.403	50.132
	Age	18-22 vs. 38-54	0.9960	0.000	<0.001	>999.999
		23-27 vs. 38-54	0.9919	0.000	<0.001	>999.999
		28-37 vs. 38-54	0.9904	0.000	<0.001	>999.999
3rd child						
	Residence	Rural vs. Urban	0.5108	0.806	0.425	1.531
	Education	College vs. Secondary school	**0.0380**	**2.460**	**1.051**	**5.755**
		Higher education vs. Secondary school	0.7809	1.129	0.479	2.664
	Income	30,001-50,000 vs. 10,000-30,000	0.2715	0.641	0.290	1.417
		50,001 > vs. 10,000-30,000	0.8346	1.106	0.430	2.842
	Religion	Islam vs. Christianity	0.6218	1.250	0.515	3.037
	Gender	Wife vs. Husband	0.9932	1.003	0.517	1.946

Tab. 31 Impact of residence, education, income, religion, gender, ethnicity, and age on desired number of children; South Kazakhstan… continue

	Ethnicity	Kazakhs vs. Russians	0.1908	2.031	0.703	5.874
	Age	18-22 vs. 38-54	0.4323	1.748	0.434	7.052
		23-27 vs. 38-54	0.1908	1.830	0.740	4.523
		28-37 vs. 38-54	0.7608	0.888	0.412	1.912
4th child						
	Residence	Rural vs. Urban	0.0694	1.731	0.957	3.131
	Education	College vs. Secondary school	0.9109	0.957	0.439	2.084
		Higher education vs. Secondary school	0.4928	1.280	0.632	2.593
	Income	30,001-50,000 vs. 10,000-30,000	**0.0373**	**0.473**	**0.234**	**0.957**
		50,001 > vs. 10,000-30,000	0.0637	0.405	0.156	1.053
	Religion	Islam vs. Christianity	**<.0001**	**12.487**	**5.873**	**26.553**
	Gender	Wife vs. Husband	0.0826	1.864	0.923	3.764
	Ethnicity	Kazakhs vs. Russians	**<.0001**	**25.381**	**9.925**	**64.909**
	Age	18-22 vs. 38-54	0.9776	1.022	0.227	4.595
		23-27 vs. 38-54	0.8836	0.931	0.356	2.435
		28-37 vs. 38-54	0.1852	0.577	0.256	1.302
5th +						
	Residence	Rural vs. Urban	0.1954	1.472	0.820	2.641
	Education	College vs. Secondary school	0.3087	1.492	0.690	3.225
		Higher education vs. Secondary school	0.4206	1.348	0.652	2.784
	Income	30,001-50,000 vs. 10,000-30,000	**0.0107**	**0.403**	**0.201**	**0.810**
		50,001 > vs. 10,000-30,000	0.0763	0.440	0.177	1.091
		No income vs. 10,000-30,000	**0.0137**	**0.274**	**0.098**	**0.768**
	Religion	Islam vs. Christianity	**<.0001**	**40.067**	**17.348**	**92.542**
	Gender	Wife vs. Husband	0.8776	1.064	0.482	2.348
	Ethnicity	Kazakhs vs. Russians	**<.0001**	**192.627**	**61.223**	**606.066**
	Age	18-22 vs. 38-54	0.9088	0.906	0.167	4.927
		23-27 vs. 38-54	0.2644	0.541	0.184	1.591
		28-37 vs. 38-54	0.0909	0.451	0.179	1.135

Note: multinomial logistic regression, statistical significant results at $p \leq 0.05$ level are presented in bold for each variable and for its respective categories; reference category of the dependent variable is desired number of 2 children. Source: Survey "Reproductive behavior of a family of Kazakhstan", 384 respondents (males and females), own calculations

Reproductive preferences are more correlated with the views of individuals regarding the number of children they want than reproductive ideals. That might be reason why the factor of family income played a significant role in desiring the particular number of children. For instance, couples who earn less money are more likely to desire four children than those who earn 2.1 times more (odds ratio is 0.473 (1/0.473 = 2.1), 30,001-50,000 national currency (tenge) vs. 10,000-30,000 tenge). In consideration of five children this interaction presents 2.4 times higher odds among poor families versus those who more or less belong to medium class (odds ratio is 0.403 (1/0.403 =2.4), 30,001-50,000 national currency (tenge) vs. 10,000-30,000 tenge). The interesting observation is that the respondents who specified that they do not have their own income desired to have five children 3.6 times higher (odds ratio is 0.274 (1/0.274 = 3.6), 10,000-30,000 national currency (tenge) vs. no income) than those who earn minimum wage. These findings proved that couples with lower income show greater attitude towards large families (Caldwell, 1976).

The responses did not show any relative significance with regards to educational attainment, though in case of three children it was revealed that the respondents who graduated from college

have 2.4 times higher odds of desiring three children than those who finished secondary school. This finding does not carry considerable information due to insignificance of educational factor in relation of to highly educated respondents with those having a certificate from secondary school.

Age and sex differences were not significant what indicates the existence of some kind of convergence in opinions between males and females in all presented generations with respect to the desired number of children what has likely revealed that traditionalism of South Kazakhstan still remains in the people's mentality even among the youth.

Urban-rural differentiation is given the special attention since it has shown a relatively considerable level of significance in the descriptive analysis, but the effect due to odds value was not so strong which means in South Kazakhstan the desired number of children differs between the respondents living in urban and rural areas to some extent. The odds effect can be more or less determined in four children category as the desired number by the difference between urban and rural respondents where p-value is 0.0694 though it is on the verge of statistical significance. The comprehensive analysis of reproductive preferences in South Kazakhstan has shown that the most influential factors of determining reproductive desires are characteristics related to family backgrounds, namely, religious affiliation and ethnicity of the respondents.

Keeping the sequence of the analysis it was decided to thoroughly examine the effects of correlation between reproductive preferences and independent factors in the two regions (North and South) together.

Regional differences are fundamental since the objective of the study is to understand reproductive views of the respondents from South Kazakhstan versus of those from North Kazakhstan. The regional aspect has shown that the respondents from South Kazakhstan desire larger families since odds ratio of four children category is 4.5 times higher and of five children 10.4 times higher compared to North Kazakhstan (tab. 32).

Tab. 32 Impact of region, residence, education, income, religion, gender, ethnicity, and age on desired number of children; North and South Kazakhstan

		Effect	P-value	Odds ratio	Confidence limits	
1st child						
	Region	South vs. North	0.9853	1.011	0.323	3.159
	Residence	Rural vs. Urban	0.4230	0.617	0.189	2.011
	Education	College vs. Secondary school	0.9379	0.945	0.229	3.905
		Higher education vs. Secondary school	0.8350	0.858	0.204	3.611
	Income	30,001-50,000 vs. 10,000-30,000	0.7991	1.251	0.223	7.013
		50,001 > vs. 10,000-30,000	0.2010	2.971	0.560	15.769
		Difficult to answer vs. 10,000-30,000	**0.0198**	**9.119**	**1.421**	**58.509**
	Religion	Islam vs. Christianity	**<.0001**	**2.391**	**2.347**	**2.435**
		Different answers vs. Christianity	**0.0011**	**0.609**	**0.453**	**0.820**
	Gender	Wife vs. Husband	0.5469	1.419	0.454	4.436
	Ethnicity	Kazakhs vs. Russians	**0.0410**	**2.987**	**1.046**	**8.528**

Tab. 32 Impact of region, residence, education, income, religion, gender, ethnicity, and age on desired number of children; North and South Kazakhstan… continue

	Age	18-22 vs. 38-54	0.4356	1.757	0.426	7.241
		23-27 vs. 38-54	0.3939	0.397	0.048	3.316
		28-37 vs. 38-54	0.7730	0.843	0.264	2.693
3rd child						
	Region	South vs. North	0.1788	1.353	0.871	2.104
	Residence	Rural vs. Urban	0.8497	0.957	0.607	1.510
	Education	College vs. Secondary school	**0.0140**	**2.065**	**1.158**	**3.681**
		Higher education vs. Secondary school	0.0775	1.725	0.942	3.160
	Income	30,001-50,000 vs. 10,000-30,000	0.1562	0.666	0.379	1.168
		50,001 > vs. 10,000-30,000	0.2749	0.687	0.350	1.348
	Religion	Islam vs. Christianity	**<.0001**	**1.218**	**1.209**	**1.227**
		Different answers vs. Christianity	**<.0001**	**1.256**	**1.182**	**1.334**
	Gender	Wife vs. Husband	0.0951	0.672	0.421	1.072
	Ethnicity	Kazakhs vs. Russians	**0.0584**	**1.589**	**0.984**	**2.566**
	Age	18-22 vs. 38-54	0.1878	1.584	0.799	3.142
		23-27 vs. 38-54	**0.0266**	**1.916**	**1.078**	**3.406**
		28-37 vs. 38-54	0.8429	0.952	0.584	1.550
4th child						
	Region	South vs. North	**<.0001**	**4.571**	**2.790**	**7.488**
	Residence	Rural vs. Urban	0.1409	1.452	0.884	2.387
	Education	College vs. Secondary school	0.3031	1.374	0.750	2.516
		Higher education vs. Secondary school	0.4482	1.275	0.680	2.392
	Income	30,001-50,000 vs. 10,000-30,000	0.4561	0.802	0.448	1.434
		50,001 > vs. 10,000-30,000	**0.0391**	**0.437**	**0.199**	**0.959**
	Religion	Islam vs. Christianity	**<.0001**	**5.045**	**5.017**	**5.073**
		Different answers vs. Christianity	**<.0001**	**7.257**	**6.916**	**7.614**
	Gender	Wife vs. Husband	0.8658	0.958	0.584	1.573
	Ethnicity	Kazakhs vs. Russians	**<.0001**	**7.957**	**4.803**	**13.182**
	Age	18-22 vs. 38-54	0.7666	1.113	0.550	2.249
		23-27 vs. 38-54	0.3130	1.351	0.753	2.423
		28-37 vs. 38-54	0.1967	0.725	0.445	1.181
5th +						
	Region	South vs. North	**<.0001**	**10.434**	**5.794**	**18.789**
	Residence	Rural vs. Urban	0.6571	1.137	0.645	2.006
	Education	College vs. Secondary school	0.1769	1.620	0.804	3.265
		Higher education vs. Secondary school	0.9087	1.043	0.505	2.157
	Income	30,001-50,000 vs. 10,000-30,000	0.4580	0.777	0.398	1.514
		50,001 > vs. 10,000-30,000	0.0720	0.456	0.194	1.073
	Religion	Islam vs. Christianity	**<.0001**	**13.488**	**13.419**	**13.557**
		Different answers vs. Christianity	**<.0001**	**1.484**	**1.340**	**1.644**
	Gender	Wife vs. Husband	**0.0259**	**0.525**	**0.298**	**0.925**
	Ethnicity	Kazakhs vs. Russians	**<.0001**	**48.182**	**23.773**	**97.652**
	Age	18-22 vs. 38-54	0.5956	0.812	0.376	1.753
		23-27 vs. 38-54	0.8551	1.060	0.570	1.971
		28-37 vs. 38-54	0.1650	0.701	0.425	1.157

Note: multinomial logistic regression, statistical significant results at $p \leq 0.05$ level are presented in bold for each variable and for its respective categories; reference category of the dependent variable is desired number of 2 children. Source: Survey "Reproductive behavior of a family of Kazakhstan", 732 respondents (males and females), own calculations

As displayed in the preceding analysis, reproductive preferences differ vastly according to religious and ethnic factors separately in each observed region. This variation was noted in the overall analysis and, besides, Kazakh couples expressed higher odds ratio of desired children in each birth order. With regard to the first birth order, such differentiation was most likely covered by the Kazakhs living in North Kazakhstan, nevertheless, total differences had 2.9 times higher odds of assuming one child as desired. A family with three children is the most preferred size, therefore it is probably less differentiated when the Kazakhs prevailed only by 1.5 times.

A family with four and five children is considered as so-called "traditional" for the Kazakhs, so based on that positive attitude towards a large family was expected from Kazakh couples. The result has proven the expectation as the number of the Kazakhs, in contrast to the Russians, considering four and five children as desired are 7.9 and 48.1 times higher respectively.

Religious affiliation has a significant effect which has revealed that Christian families are more likely to desire one or two children even versus those who chose "different answer". The category "different answer" means that respondents did not identify themselves as religious or nonreligious and pointed out: "Religion is important, but I would not say I believe in it with necessary extent or do not believe at all". Nevertheless, the number of the Muslim respondents who chose "different answer" desire to have three, four and five children 1.2, 7.2 and 1.4 times higher respectively. In contrast, the number of Christian families considering one child as desired is 1.6 times higher than those who chose the option "different answer" (odds is 0.609 (1/0.609 = 1.6), "different answer" vs. Christianity).

The relationship between Muslim and Christian families in their reproductive desires revealed higher effect in each birth order in favor of Muslim families. However, substantial differentiation is related to five children as odds ratio is 13.4 times higher for Muslim families compared to Christian families. The most insignificant differences appeared in the desire of three children with 1.2 times higher odds among Muslim families in comparison with Christians. Such result once more confirms the convergence in this desire. The number of Muslim couples considering one and four children as preferable number was 2.3 (one) and 5.0 (four) higher versus Christian families. Hereby, it has become evident that Christian families are less likely to desire more than one or two children in contrast to Muslim families who maintain desires for four, five and more children.

As noted above urban-rural differences are less significant especially in South Kazakhstan. This may reflect the insignificance and no effect by the place of residence.

When analyzing age and sex differences it was revealed that the desire to have three children has 1.9 times higher odds ratio among the respondents at the age of 23-27 in comparison to those belonging to the eldest generation (38-54 years old). With regard to sex differences, in the separate analysis it was found that males are more optimistic to consider large families and in the conjoint analysis this effect showed higher odds ratio (1.9) in the category of five and more children (odds ratio is 0.525 (1/0.525 = 1.9), wife vs. husband).

It turned out that education is not an important factor in this regard since there was no relative effect. The only significance occurred in considering three children as desired with 2.0 times higher odds ratio in favor of those with college degree versus the respondents with secondary school education. Family income factor was more significant than education since reproductive desires and plans are directly associated with the so-called "cost of upbringing a child" (Sobotka, 2011). It is well known that cost of bringing up children influences the desired number of children but practice have shown that poor families have more children than families with considerable income. Our finding proved this theory (Caldwell, 1976) as the desire to have four children was 2.3 times higher among the respondents with minimum wage versus the respondents who earn highest presented wage (odds ratio is 0.437, 50,001 and above national currency (tenge) vs. 10,000-30,000 tenge). However, the desire for one child was 9.1 times higher among those who found the question of income as "difficult to answer" versus the respondents with minimum wage.

Overall result has shown that the respondents from South Kazakhstan incline towards large families in their reproductive preferences, whereas in North Kazakhstan considerable extent of preference is given to two or three children. For both regions ethnic and religious factors are highly significant. Age and sex factors play less role as well as factors of educational level and family income. Urban-rural differences remain in North Kazakhstan, whereas in South Kazakhstan due to the effect of strong values there is a convergence in reproductive desires of urban and rural couples.

7.3 Reproductive intentions

Reproductive intentions as well as reproductive preferences are paid special attention in most of the researches such as WFS, DHS and NFS. Reproductive intentions on their turn are examined even more by the scholars (Philipov, 2011) due to the reason of individual's readiness to plan or decide whether to have a child or not (Sobotka, 2011). In theory reproductive intentions as a measuring factor of further fertility realization were analyzed in the models mentioned above, namely, TPB model (Ajzen, 1991) and RWA model (Lesthaeghe and Vanderhoeft, 2001). These conceptual models determine the link from reproductive intentions to behavior.

Our analysis is based on reproductive intentions through planned number of children by the respondents. In order to clearly define the meaning of the planned number of children in this study there is a need to distinguish one feature that is the number of children planned for a lifetime (Miller, 2011). The clear question about reproductive plans implies the following formulation: "How many children do you plan to have, including the children you already have?" Therefore, we are interested in the total number of children planned by the respondents along their entire reproductive life.

The analysis contains the planned number of children among the couples living in North and South Kazakhstan observed in relation with the factors mentioned in Chapter 4.

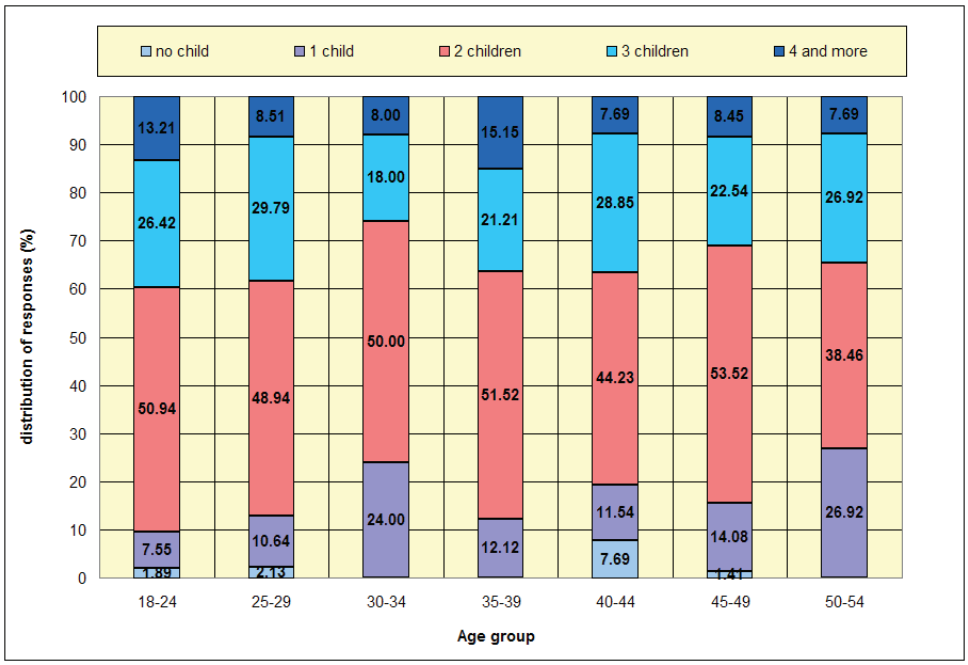
7.3.1 Planned number of children among couples from North Kazakhstan

First and foremost, planned number of children among couples from North Kazakhstan was analyzed by age differences, urban-rural belonging, sex and ethnicity.

As it was mentioned, North Kazakhstan is considered to be a developed and urbanized region, so we expected that the planned number of children would be related to a medium family size with two or three children, but due to changes of life values, age component is likely to play its role. Young generation might concentrate on one or two children, whereas older generations would maintain their plans of three children.

The result has shown that the expectations were not proven because reproductive plans due to age differences are not significant (0.1351). It clearly indicates that the planned number of children does not vary significantly between the respondents at young and older age (fig. 74). The most frequent answer among all the respondents in North Kazakhstan is two children.

Fig. 74: Planned number of children by age of the respondents (%), North Kazakhstan, 2007,



Note: Statistical significance of total data set p = 0.1351, own calculations

Source: Survey "Reproductive behavior of a family of Kazakhstan", 348 respondents (males and females)

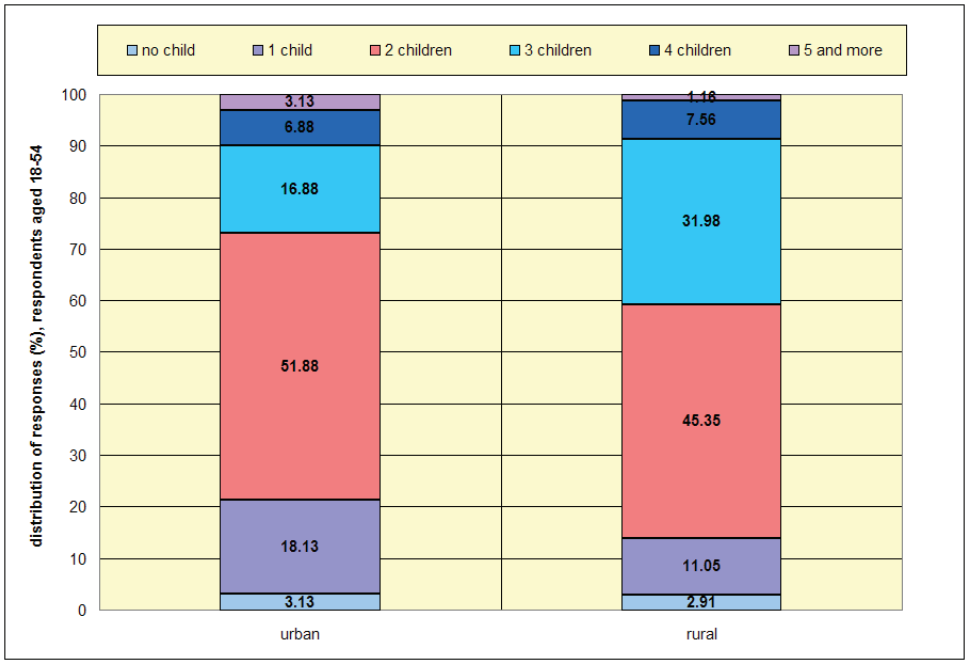
Some slight differentiations appeared in one, three and four children categories. For instance, the most vulnerable generation at the age of 30-34 (born in the 1970s and entered reproductive stage in the 1990s, time of socio-economic depression) have mostly chosen one child, whereas for two youngest generations (18-24 and 25-29 years old) as well as for three older ones (35-39, 40-44 and 45-49 years old) the second widespread answer is three children.

For the eldest generation two children is the most preferred number while one and three children are posited equally. For this generation the real picture of reproductive behavior is related to the number of children they already have due to their age.

A closer attention needs to be paid to reproductive intentions of the respondents at the age of 40-44 who do not plan to have a child (7.69 %) and do not have child/children as of now. The proportion of childless respondents at the age of 40 and above is 22.0 % among all childless respondents. The number is substantial since those respondents are at the latest stage of reproductive period and it may be related to their reproductive health since 8.0 % of childless respondents at the age of 40 and above defined their reproductive health as follows: 4.0 % are satisfied with their health but it could be better and for 4.0 % their reproductive health is not satisfactory and could be better. Only 3.0 % of them posed reproductive health as good and 11.0 % were satisfied with their health.

Further, the planned number of children was examined with respect to the place of residence: urban and rural. Assuming that reproductive plans are required to be more precise in comparison with reproductive preferences it was expected that urban respondents would consider two children on average, whereas rural respondents would prefer three and more. Although there is a notable differentiation in three children (fig. 75) the result is insignificant (0.0681).

Fig. 75: Planned number of children by the place of residence of the respondents (%), North Kazakhstan, 2007,



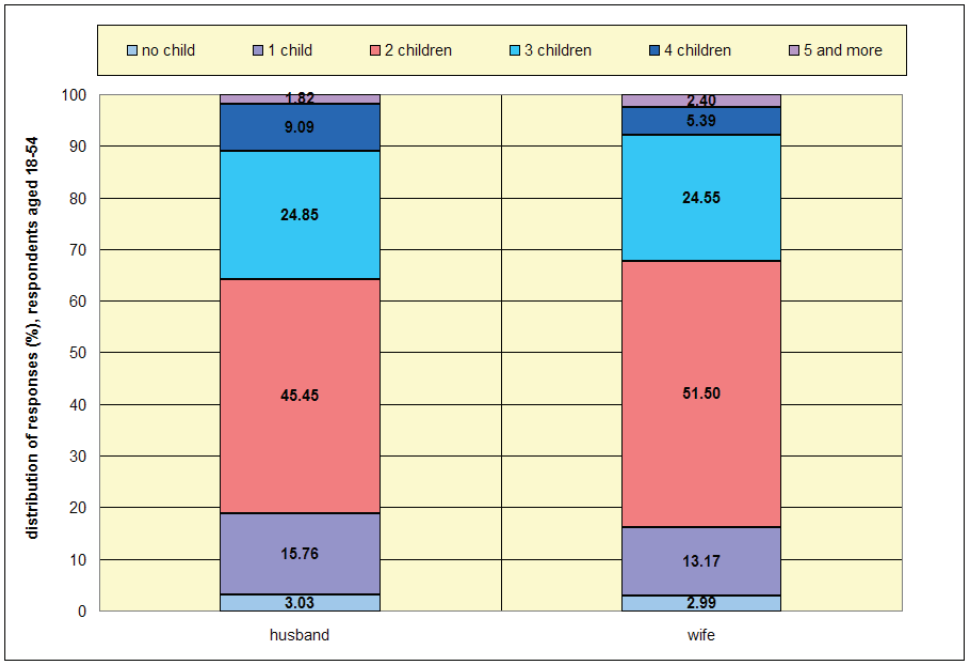
Note: Statistical significance of total data set p = 0.0681, own calculations

Source: Survey "Reproductive behavior of a family of Kazakhstan", 348 respondents (males and females)

Respondents' attitudes in both urban and rural areas are mainly related to reproductive plans of two children. This intention (two children) is slightly higher among urban couples but cannot be considered with relative dissimilarity. Yet, reproductive intentions of three children more or less adhere to the assumption since the number of rural couples considering three children is 15.10 % higher compared to urban.

Sex difference has been found insignificant as well (0.7751) even though North males showed optimistic attitude in their reproductive ideals and preferences. Reproductive plans on their turn revealed that there is no readiness for a large family due to some reasons.

Fig. 76: Planned number of children by sex differences of the respondents (%), North Kazakhstan, 2007,



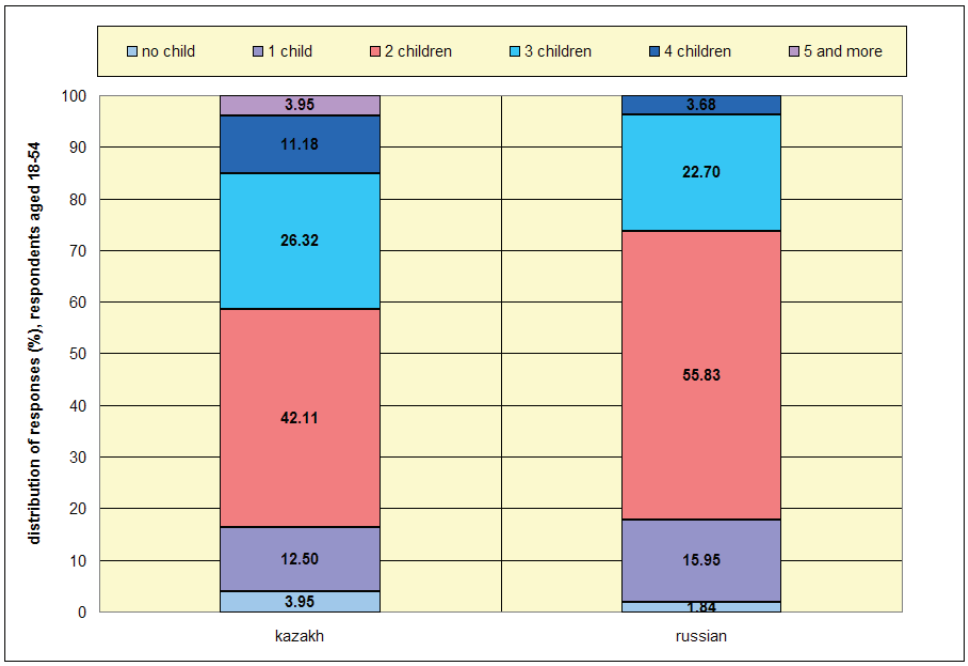
Note: Statistical significance of total data set p = 0.7751, own calculations

Source: Survey "Reproductive behavior of a family of Kazakhstan", 348 respondents (males and females)

The plans of having two children remain to be the most preferred among males as well as females. A slight positive reproductive intention of four children appeared among males, but cannot be relatively significant.

The differences with regards to ethnic factor were found to be insignificant as well (0.2433) though this factor plays a great role in the opinions of ideal and desired number of children. The result of reproductive plans points out to the existence of convergence of opinions between the Kazakhs and the Russians living in North Kazakhstan (fig. 77). The weight of the planned number of children in each birth order is approximately the same between Kazakh and Russian couples, except for the two children category that is a bit higher among the Russians and four children that is relatively higher among the Kazakhs (fig. 77).

Fig. 77: Planned number of children by ethnicity of the respondents (%), North Kazakhstan, 2007,



Note: Statistical significance of total data set p = 0.2423, own calculations

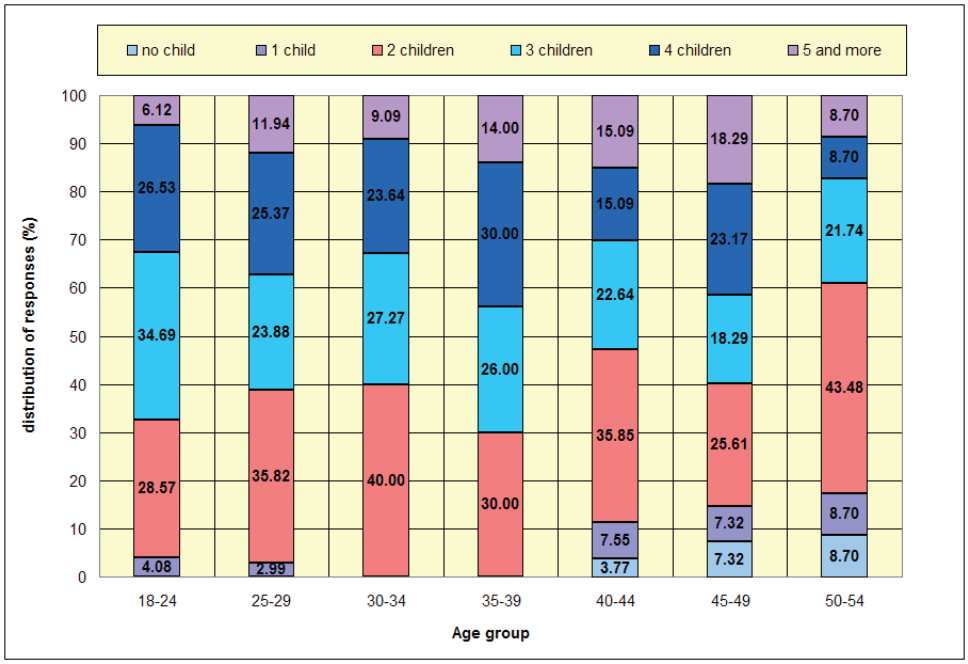
Source: Survey "Reproductive behavior of a family of Kazakhstan", 348 respondents (males and females)

Reproductive intentions as a strict measurement of the future fertility showed less optimistic attitude of the respondents from North Kazakhstan than their ideal and desired number of children. Deeming about the real plans of having children, the respondents considered two children as the most feasible number. Keeping that in mind, it makes us infer that in North Kazakhstan regardless of age differences, urban-rural differentiation, and sex or ethnicity, couples plan to have so-called "medium" family with two children on average.

7.3.2 Planned number of children among couples from South Kazakhstan

The analysis of reproductive intentions in South Kazakhstan has been carried out with the aforementioned factors including age differentiation, urban-rural belonging, sex differences and ethnicity. Having the same structure with the presented analysis of North Kazakhstan we had different assumption for South Kazakhstan due to its so-called "traditional" reproductive behavior. With regard to age-related differences our expectation of planned number of children was the following: reproductive plans for a large family are likely to appear among the respondents at older age than younger. The result has shown that there is a significance of 0.0003 but the number of the respondents representing the eldest generation (50-54 years old) who plan two children (fig. 78) is substantial in contrast to other generations.

Fig. 78: Planned number of children by age of the respondents (%), South Kazakhstan, 2007,



Note: Statistical significance of total data set p = 0.0003, own calculations

Source: Survey "Reproductive behavior of a family of Kazakhstan", 384 respondents (males and females)

Such result indicates that couples from South Kazakhstan are able to afford only two children regardless of their ideals and preferences to have large families. It is not surprising that due to the "cost of upbringing a child" (Sobotka, 2011) and other circumstances couples are compelled to reduce their desires which can be alarming for policymakers.

Among all the respondents the youngest generation (18-24 years old) has relatively more optimistic plans since three children is their most frequent answer (fig. 78) while two and four children are very popular picks as well, but the question is whether their intentions would be implemented in reality.

Reproductive plans of four children were expected among the respondents born in the 1960s since they had been brought up with old values and in the time of economic growth (2000s) may have decided to implement their postponed births. However, the result has shown that those generations (from 40 years and above) have not planned to have more than two or three children. The category of four children has a substantial weight among the respondents aged 40 and above particularly in the age group of 45-49 year olds (23.17 %).

In contrast to the expectation, age group of 35-39 years showed more positive attitude towards four children (30.00 %) even though this generation lived during both Soviet and post-Soviet times which required the formation of the new values accordingly. Moreover, their reproductive life

started in the 1990s when the whole country had to endure socio-economic hardship after the collapse of the Soviet Union.

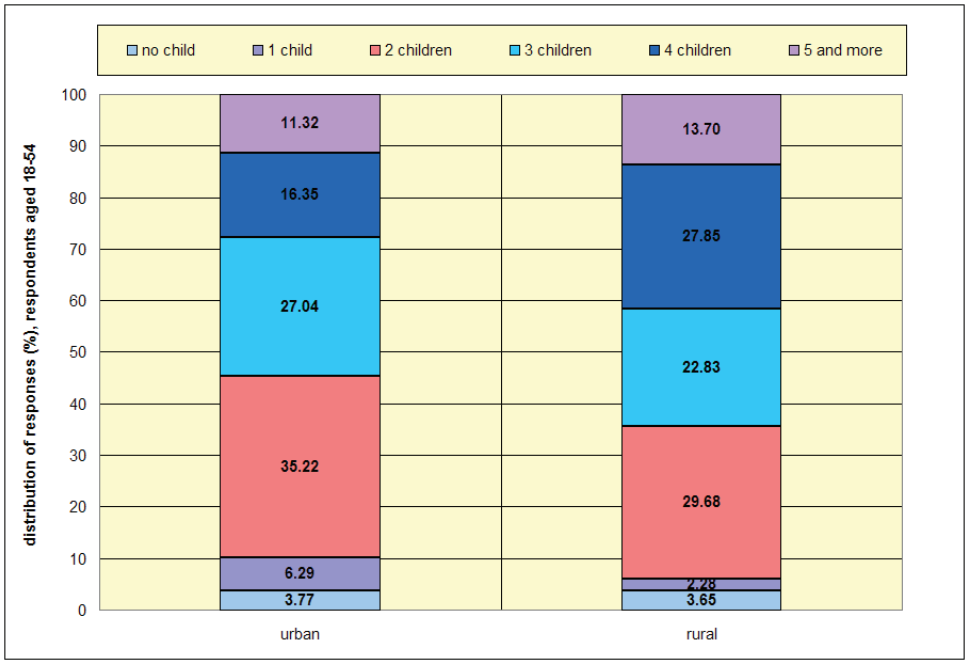
By paying closer attention to the responses of the respondents who do not plan to have child/children it can be assumed that it has something to do with their reproductive health. Hence, such an answer appeared among the respondents aged 40 and above. Among all the childless respondents 22.5 % are those at the age of 40 and above who defined the following: 10.0 % have poor reproductive health, 7.5 % are satisfied with their health and 5.0 % have good reproductive health (in general).

The result has revealed that age factor plays a significant role in reproductive planning. However, the category of two children remains to be the most preferred even in traditional South Kazakhstan. Nevertheless, the respondents at the age of 18-39 maintain positive attitude towards three and four children, but it has to be further analyzed whether those reproductive plans would be implemented.

Reproductive behavior has differed in urban-rural areas during the last fifty years as a result of various lifestyles and social environment. Obviously, when living in the city couples or individuals are required to carefully plan each birth due to circumstances related to particular lifestyle in urban area and/or financial difficulties. In rural area the decision to have another child appears to be less stressful because of the financial stability from farming and support from grandparents in looking after and upbringing the children. It was hypothesized that reproductive intentions among rural respondents would incline towards large family. The result has shown the significance (0.0255) but not to a great extent, therefore, the differentiation of reproductive intentions among urban and rural couples is not prominent (fig. 79).

The most considerable differences of opinions are related to the category of four children since the number of rural couples having this reproductive intention is 11.50 % higher than the number of urban couples. A slight divergence has been noted in the plans of two children (5.54 % higher) in favor of urban couples. This finding suggests that in rural areas reproductive plans are maintained towards larger family with four children while in urban areas the most feasible number is two children.

Fig. 79: Planned number of children by the place of residence of the respondents (%), South Kazakhstan, 2007,

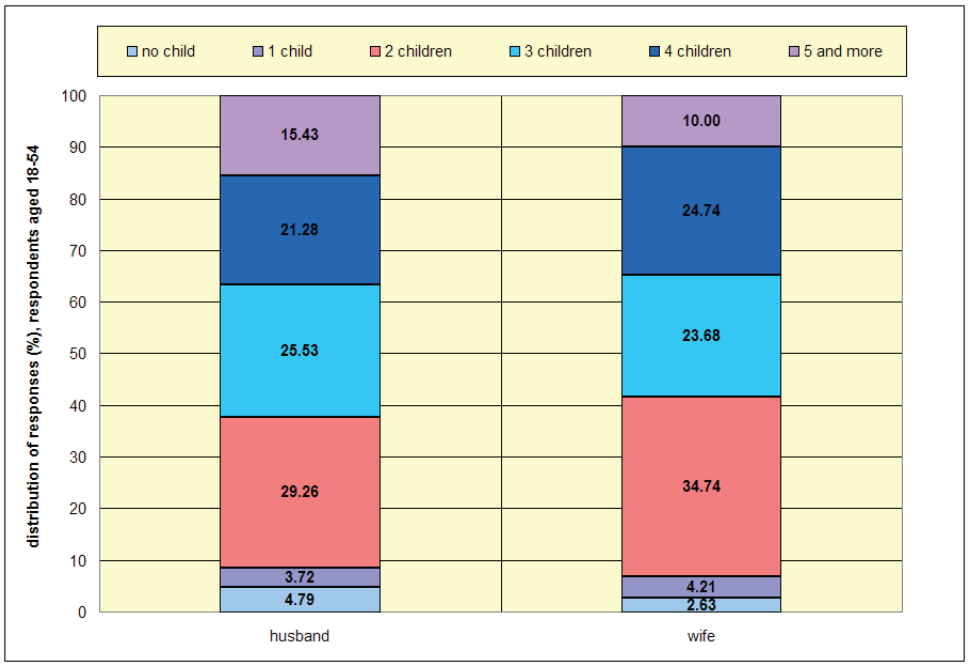


Note: Statistical significance of total data set p = 0.0255, own calculations

Source: Survey "Reproductive behavior of a family of Kazakhstan", 384 respondents (males and females)

In terms of sex differentiation, the significance between reproductive plans of males and females was not found (0.8421). Even in reproductive ideals and preferences couples from South Kazakhstan showed the convergence of opinions and same has happened with the planned number of children (fig. 80).

Fig. 80: Planned number of children by sex differences of the respondents (%), South Kazakhstan, 2007,

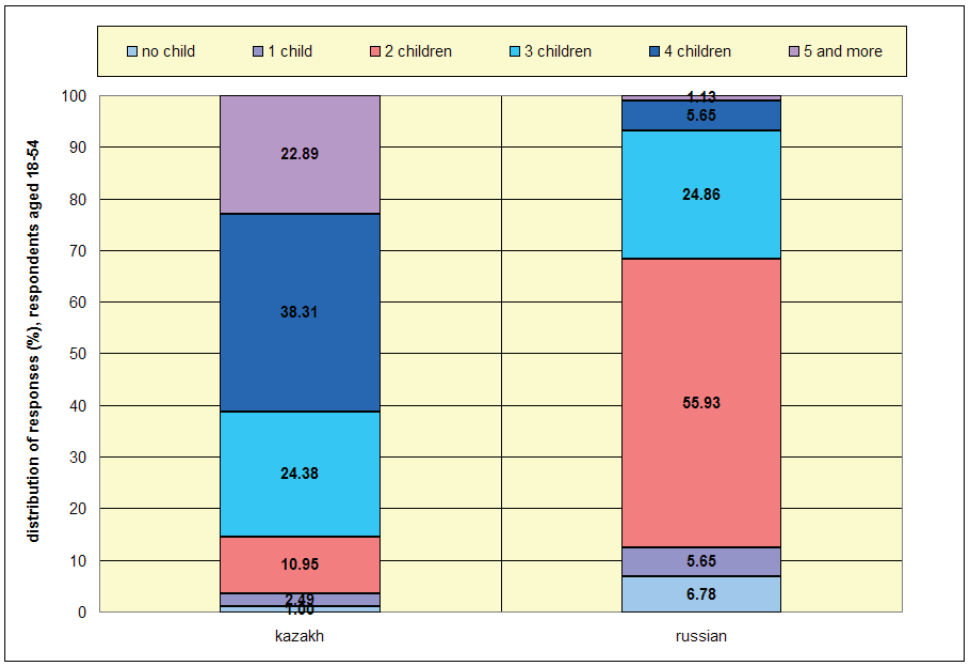


Note: Statistical significance of total data set p = 0.8421, own calculations

Source: Survey "Reproductive behavior of a family of Kazakhstan", 384 respondents (males and females)

Ethnic differentiation is sharply evinced in South Kazakhstan which was proved through reproductive ideals and preferences between Kazakh and Russian couples. Considering that and taking into account the lifestyle of the Kazakhs and the Russians we expected to trace the differences in their reproductive plans. According to the level of statistical significance (less than 0.0001) there are dissimilarities in the planned number of children between the two observed ethnicities. As reflected in figure 81 more than half of Russian couples plan to have two children, whereas the most frequent planned number of children among the Kazakhs is four.

Fig. 81: Planned number of children by ethnicity of the respondents (%), South Kazakhstan, 2007,



Note: Statistical significance of total data set $p < 0.0001$, own calculations

Source: Survey "Reproductive behavior of a family of Kazakhstan", 384 respondents (males and females)

One interesting fact is related to the planned number of five and more children that is the number of Kazakh couples who plan to have that many children is 21.76 % higher than the number of the Russians.

Overall analysis of reproductive intentions in South Kazakhstan has shown that age differentiation plays an essential role even though each selected age group mostly considered two children as planned except for the youngest generation (18-24 years) which prefers to have three children. Urban-rural belonging expressed a small difference that was mostly reflected in the plans of four children in favor of rural couples. Ethnic factor has evidently demonstrated a considerable difference with readiness of Kazakh couples to have large families. The only factor which has not shown any significance is sex difference what indicates that husbands and wives have approximately the same reproductive plans.

7.3.3 Effect of planned number of children among North and South couples

Multinomial logistic regression has been used to examine reproductive intentions among the couples living in North and South Kazakhstan. When analyzing reproductive intentions the category of two children has been chosen as a reference category (Chapter 4) and independent variables are as follows: urban-rural belonging, educational attainment, family income, religious affiliation, sex differences, ethnicity and age differentiation. According to the classification presented in Chapter 4 each of the independent variables has a reference as well. For instance, considering the effect of the

planned number of children due to urban-rural belonging, urban area has been chosen as a reference.

The analysis of reproductive plans of the respondents from North Kazakhstan by urban-rural belonging has shown the effect in three children as the planned number with prevailing odds ratio of 2.0 among the rural couples (tab.33).

Tab. 33 Impact of residence, education, income, religion, gender, ethnicity, and age on planned number of children; North Kazakhstan

		Effect	P-value	Odds ratio	Confidence limits	
No children						
	Residence	Rural vs. Urban	0.7866	0.831	0.218	3.174
	Education	College vs. Secondary school	0.8792	8856.556	<0.001	>999.999
		Higher education vs. Secondary school	0.8698	18096.30	<0.001	>999.999
	Income	30,001-50,000 vs. 10,000-30,000	0.9659	1.046	0.134	8.136
		50,001 > vs. 10,000-30,000	0.5146	1.907	0.274	13.294
	Religion	Islam vs. Christianity	0.2074	2.361	0.621	8.977
	Gender	Wife vs. Husband	0.9772	1.019	0.276	3.757
	Ethnicity	Kazakhs vs. Russians	0.1450	2.925	0.691	12.384
	Age	18-22 vs. 38-54	0.3084	0.326	0.038	2.819
		23-27 vs. 38-54	0.3550	0.363	0.043	3.105
		28-37 vs. 38-54	0.9828	0.000	<0.001	>999.999
1st child						
	Residence	Rural vs. Urban	0.1929	0.637	0.323	1.256
	Education	College vs. Secondary school	0.0980	2.537	0.842	7.639
		Higher education vs. Secondary school	0.0719	2.923	0.909	9.396
	Income	30,001-50,000 vs. 10,000-30,000	0.3360	0.571	0.182	1.789
		50,001 > vs. 10,000-30,000	0.1526	2.058	0.766	5.533
		No income vs. 10,000-30,000	**0.0050**	**4.319**	**1.556**	**11.986**
		Hard to answer vs. 10,000-30,000	**0.0552**	**3.019**	**0.976**	**9.341**
	Religion	Islam vs. Christianity	0.7258	1.135	0.558	2.308
	Gender	Wife vs. Husband	0.4514	0.777	0.404	1.497
	Ethnicity	Kazakhs vs. Russians	0.7547	1.115	0.564	2.205
	Age	18-22 vs. 38-54	0.2231	0.483	0.150	1.557
		23-27 vs. 38-54	0.3951	0.626	0.213	1.842
		28-37 vs. 38-54	0.7356	1.138	0.538	2.404
3rd child						
	Residence	Rural vs. Urban	**0.0113**	**2.076**	**1.180**	**3.652**
	Education	College vs. Secondary school	0.7952	0.910	0.447	1.854
		Higher education vs. Secondary school	0.3096	1.489	0.691	3.210
	Income	30,001-50,000 vs. 10,000-30,000	**0.0463**	**0.473**	**0.227**	**0.988**
		50,001 > vs. 10,000-30,000	**0.0044**	**0.183**	**0.057**	**0.590**
	Religion	Islam vs. Christianity	**0.0366**	**1.820**	**1.038**	**3.190**
	Gender	Wife vs. Husband	0.6012	0.865	0.501	1.492
	Ethnicity	Kazakhs vs. Russians	0.2093	1.430	0.818	2.501
	Age	18-22 vs. 38-54	0.8813	0.940	0.417	2.118
		23-27 vs. 38-54	0.6356	1.206	0.556	2.612
		28-37 vs. 38-54	0.4017	0.742	0.369	1.490

Tab. 33 Impact of residence, education, income, religion, gender, ethnicity, and age on planned number of children; North Kazakhstan… continue

4th child						
	Residence	Rural vs. Urban	0.7333	0.869	0.388	1.946
	Education	College vs. Secondary school	0.2608	0.524	0.170	1.617
		Higher education vs. Secondary school	0.3482	1.647	0.581	4.670
	Income	30,001-50,000 vs. 10,000-30,000	0.2556	0.571	0.217	1.501
		50,001 > vs. 10,000-30,000	0.0658	0.289	0.077	1.085
	Religion	Islam vs. Christianity	**0.0031**	**3.838**	**1.574**	**9.356**
	Gender	Wife vs. Husband	0.1822	0.577	0.257	1.295
	Ethnicity	Kazakhs vs. Russians	**0.0005**	**5.575**	**2.132**	**14.578**
	Age	18-22 vs. 38-54	0.2919	1.808	0.601	5.439
		23-27 vs. 38-54	0.7471	0.796	0.199	3.189
		28-37 vs. 38-54	0.3505	1.585	0.603	4.169

Note: multinomial logistic regression, statistical significant results at $p \leq 0.05$ level are presented in bold for each variable and for its respective categories; reference category of the dependent variable is planned number of 2 children. Source: Survey "Reproductive behavior of a family of Kazakhstan", 348 respondents (males and females), own calculations

Age and sex differences did not show any effect, what has become evident in the descriptive analysis presented above, since the interrelation of observed categories demonstrated no significance.

Planned number of children according to ethnic differentiation in North Kazakhstan exposed insignificance as well what was presented in the descriptive analysis, however, due to percentage distribution sharp dissimilarities appeared in the second and fourth birth orders. These differences play a comparative role in odds effect since the number of Kazakh couples planning to have four children is 5.5 times higher compared to the Russians (tab.33).

Ethnic factor is more or less related to religious affiliation of the respondents, but for people living in North Kazakhstan it does not have strict influence. Nevertheless, religious factor seems to play a significant role in the categories of three and four children as planned as Kazakh couples displayed 1.8 times higher odds ratio of having three children and 3.8 times higher ratio of having four children in contrast to the Russians (tab.33).

Widely analyzed among European scholars, educational (Wachter and Neels, 2011) and family income factors (Robinson, 1997) do not properly fit to reproductive behavior as well as plans of the couples in Kazakhstan. It has been found that educational level does not have a significant role for the respondents of North Kazakhstan while making a reproductive decision. The factor of financial income has proven J.C. Caldwell's fertility theory that distinguishes modernized and traditional society which relates to reproductive intentions and behaviors in North Kazakhstan as well as Kazakhstan as a whole in contrast to the well-known models of balance in planning to have children based on family income by H.M. Leibenstein (Leibenstein, 1975) and "child-quality" by G. S. Becker (Becker and Lewis, 1973). Hence, the analysis has revealed that the respondents who earn less are ready to plan more children compared to those who are well-off. For instance, plans to have three children have 2.1 higher odds ratio among the respondents with relatively lower family income versus families belonging to middle class (odds ratio is 0.473 (1/0.473 = 2.1), 30,001-

50,000 national currency (tenge) vs. 10,000-30,000 tenge). Meanwhile, the respondents with substantial family income have risk of having three children at 0.183 which indicates that families with low income have 5.4 times higher odds to plan this number of children (tab.33).

The interesting fact is related to the assumption of one child as the respondents who replied that they do not earn their own income or such question is difficult to answer have 4.3 higher odds ratio (do not earn own income) and 3.0 higher odds ratio (difficult to answer) in planning to have one child compared to poor families (tab.33).

Overall analysis of the effect in reproductive intentions among the couples living in North Kazakhstan has displayed the religious and ethnic belonging to be the most important factors for the respondents, whereas urban-rural differentiation and family income are significant to some extent.

Among the couples living in South Kazakhstan the urban-rural factor plays more considerable role than in North Kazakhstan. Namely, rural respondents demonstrated 1.2 times higher odds ratio in planning to have four children (tab.34). Urban respondents on their turn prevailed in such reproductive intentions as not planning a child and planning one child and three children. The risk indicator is 0.939 (1/0.939 = 1.0) for rural versus urban responses of no plans to have children which means that urban respondents have 1.0 times higher odds ratio for having no reproductive plans. The correlation with regards to the plan of having one child has revealed that urban couples have 2.2 times higher odds ratio since risk is 0.454 with rural versus urban answers. The plans to have three children prevail among the urban respondents with 1.0 times higher odds ratio since risk is 0.929 (1/0.929 = 1.0) among rural answers versus urban (tab.34).

Tab. 34 Impact of residence, education, income, religion, gender, ethnicity, and age on planned number of children; South Kazakhstan

		Effect	P-value	Odds ratio	Confidence limits	
No children						
	Residence	Rural vs. Urban	**<.0001**	**0.939**	**0.926**	**0.951**
	Education	College vs. Secondary school	0.9888	1.009	0.301	3.383
		Higher education vs. Secondary school	0.0676	0.129	0.014	1.160
	Income	30,001-50,000 vs. 10,000-30,000	**<.0001**	**1.073**	**1.053**	**1.094**
		50,001 > vs. 10,000-30,000	**<.0001**	**1.385**	**1.340**	**1.432**
	Religion	Islam vs. Christianity	0.2597	2.063	0.586	7.269
	Gender	Wife vs. Husband	0.4114	0.605	0.182	2.008
	Ethnicity	Kazakhs vs. Russians	0.6262	0.669	0.133	3.370
	Age	18-22 vs. 38-54	0.9955	0.000	<0.001	>999.999
		23-27 vs. 38-54	0.9921	0.000	<0.001	>999.999
		28-37 vs. 38-54	0.9907	0.000	<0.001	>999.999
1st child						
	Residence	Rural vs. Urban	**<.0001**	**0.454**	**0.445**	**0.463**
	Education	College vs. Secondary school	0.9486	1.051	0.233	4.732
		Higher education vs. Secondary school	0.5763	1.504	0.360	6.288
	Income	30,001-50,000 vs. 10,000-30,000	**<.0001**	**0.566**	**0.551**	**0.581**
		50,001> vs. 10,000-30,000	**<.0001**	**2.809**	**2.743**	**2.878**
	Religion	Islam vs. Christianity	0.1158	2.579	0.792	8.398

Tab. 34 Impact of residence, education, income, religion, gender, ethnicity, and age on planned number of children; South Kazakhstan… continue

	Gender	Wife vs. Husband	0.9649	1.025	0.334	3.144
	Ethnicity	Kazakhs vs. Russians	0.3179	1.852	0.553	6.210
	Age	18-22 vs. 38-54	0.9955	0.000	<0.001	>999.999
		23-27 vs. 38-54	0.5937	0.707	0.197	2.530
		28-37 vs. 38-54	0.9908	0.000	<0.001	>999.999
3rd child						
	Residence	Rural vs. Urban	**<.0001**	**0.929**	**0.921**	**0.937**
	Education	College vs. Secondary school	0.7775	0.901	0.436	1.861
		Higher education vs. Secondary school	0.4783	1.289	0.639	2.600
	Income	30,000-50,000 vs. 10,000-30,000	**<.0001**	**0.556**	**0.549**	**0.563**
		50,000 > vs. 10,000-30,000	**<.0001**	**2.426**	**2.393**	**2.460**
		No income vs. 10,000-30,000	**<.0001**	**0.646**	**0.635**	**0.658**
	Religion	Islam vs. Christianity	**<.0001**	**5.387**	**2.843**	**10.208**
	Sex	Wife vs. Husband	0.4106	0.782	0.436	1.404
	Ethnicity	Kazakhs vs. Russians	**<.0001**	**4.961**	**2.669**	**9.221**
	Age	18-22 vs. 38-54	0.4470	1.522	0.516	4.493
		23-27 vs. 38-54	0.5797	1.248	0.570	2.728
		28-37 vs. 38-54	0.9042	0.958	0.480	1.912
4th child						
	Residence	Rural vs. Urban	**<.0001**	**1.233**	**1.224**	**1.243**
	Education	College vs. Secondary school	0.3690	0.742	0.386	1.423
		Higher education vs. Secondary school	0.6503	1.156	0.617	2.166
	Income	30,000-50,000 vs. 10,000-30,000	**<.0001**	**0.549**	**0.543**	**0.555**
		50,000 > vs. 10,000-30,000	**<.0001**	**0.953**	**0.938**	**0.969**
		No income vs. 10,000-30,000	**<.0001**	**0.441**	**0.433**	**0.448**
	Religion	Islam vs. Christianity	**<.0001**	**57.675**	**26.213**	**126.898**
	Sex	Wife vs. Husband	0.6036	0.845	0.447	1.597
	Ethnicity	Kazakhs vs. Russians	**<.0001**	**45.679**	**21.443**	**97.306**
	Age	18-22 vs. 38-54	0.3925	0.568	0.155	2.076
		23-27 vs. 38-54	0.8387	1.091	0.471	2.528
		28-37 vs. 38-54	0.8639	0.936	0.439	1.995

Note: multinomial logistic regression, statistical significant results at $p \leq 0.05$ level are presented in bold for each variable and for its respective categories; reference category of the dependent variable is planned number of 2 children. Source: Survey "Reproductive behavior of a family of Kazakhstan", 384 respondents (males and females), own calculations

The factor of educational level did not show any significance among the respondents of South Kazakhstan same as in North Kazakhstan. Nevertheless, family income is an important factor for both analyzed regions. Thus, the respondents from South Kazakhstan who have a relatively stable financial situation do not plan to have a child at 1.0 times higher (30,001-50,000 national currency (tenge) vs. 10,000-30,000 tenge) and 1.3 times higher odds ratios (50,001 and above national currency (tenge) vs. 10,000-30,000 tenge). With regards to planning one child, the result of the analysis is quite interesting because reproductive attitudes of the respondents have two trends when families with low income have 1.7 times higher odds ratio (odds is 0.566, 30,001-50,000 national currency (tenge) vs. 10,000-30,000 tenge) in contrast to middle class families and when relatively well-off families have 2.8 higher odds ratio versus families with low income. This interesting result applies to reproductive intentions of three children as well. The first trend which clearly indicates that families with low income are ready to have more children (Caldwell, 1976) was displayed by:

1.8 times higher risk for three children among families with low income versus middle class families (odds ratio is 0.556 (1/0.556 = 1.8), 30,001-50,000 national currency (tenge) vs. 10,000-30,000 tenge) and 0.646 (1/0.646 = 1.5) times higher risk to have three children among those having lower income versus those who do not have their own income which means there is 1.5 times higher odds ratio in an inverse relation.

As for the plans to have four children, financial factor plays an imperative role as well with a clear expectation of couples with low income to have large family: 1.8 higher odds among couples with low income versus middle class families (odds ratio is 0.549, 30,001-50,000 national currency (tenge) vs. 10,000-30,000 tenge) and 1.0 times higher odds among low income families in comparison with well-off families (odds is 0.953, 50,001 and above national currency (tenge) vs. 10,000-30,000 tenge). The only point that does not precisely fit to the assumption is the readiness of people with low income to have a large family. Namely, the number of respondents with lower income planning to have four children is 2.3 higher versus the respondents who do not have their own income (odds ratio is 0.441, no income vs. 10,000-30,000 tenge). It is a bit intricate to judge that relation since there may be a chance that the respondents with no income have better conditions based on their partner's earnings.

Religious and ethnic factors have played quite a significant role according to the odds value. The number of Muslim families planning to have three and four children is 5.3 and 57.6 times higher accordingly in comparison with Christian families. The ethnic factor exposed approximately similar distribution: 4.9 times higher odds with three children and 45.6 higher odds with four children.

Age and sex differences did not show any significance. Even though in the descriptive analysis age factor demonstrated relatively significant correlation among the observed age groups, in wider groups which were used in multinomial regression methods it happened to be insignificant. Sex difference does not excel among the couples from South Kazakhstan what indicates the existence of some convergence in their reproductive intentions.

Overall analysis of reproductive intentions in South Kazakhstan has revealed that for couples living there factors such as religious affiliation, ethnicity, urban-rural belonging as well as family income are predominant.

We have aimed to analyze reproductive intentions of both regions together (Model 2, Chapter 4) in order to find out firstly, the effect between the two regions and secondly, the extent of the effect of aforementioned independent variables within North and South Kazakhstan.

Regional aspect induces the interest with reference to differences in reproductive plans of couples living in North and South Kazakhstan. Regional differentiation turned out to be significant in reproductive plans of one, three and four children. In relation to the plans to have one child the couples living in North Kazakhstan displayed 2.0 times higher odds ratio (odds ratio is 0.496, South vs. North) (tab.35). As for the three and four children, the couples living in South Kazakhstan due to their traditional lifestyle and obsolete reproductive views exposed 1.7 (three children) and 8.3 times higher odds ratio (four and more children) (tab.35).

Tab. 35 Impact of region, residence, education, income, religion, gender, ethnicity, and age on planned number of children; North and South Kazakhstan

		Effect	P-value	Odds ratio	Confidence limits	
No children						
	Region	South vs. North	0.1124	2.098	0.840	5.236
	Residence	Rural vs. Urban	0.9916	1.005	0.393	2.571
	Education	College vs. Secondary school	0.8983	0.927	0.292	2.946
		Higher education vs. Secondary school	0.9916	1.007	0.275	3.685
	Income	30,001-50,000 vs. 10,000-30,000	0.9514	1.035	0.341	3.142
		50,001 > vs. 10,000-30,000	0.5449	1.518	0.393	5.856
	Religion	Islam vs. Christianity	0.2319	1.681	0.717	3.940
	Gender	Wife vs. Husband	0.5395	0.747	0.294	1.897
	Ethnicity	Kazakhs vs. Russians	0.6057	1.278	0.504	3.242
	Age	18-22 vs. 38-54	0.0734	0.155	0.020	1.193
		23-27 vs. 38-54	**0.0349**	**0.112**	**0.015**	**0.856**
		28-37 vs. 38-54	0.9725	0.000	<0.001	>999.999
1st child						
	Region	South vs. North	**0.0364**	**0.496**	**0.258**	**0.957**
	Residence	Rural vs. Urban	0.0614	0.532	0.275	1.030
	Education	College vs. Secondary school	0.2547	1.683	0.687	4.125
		Higher education vs. Secondary school	0.1300	2.047	0.810	5.174
	Income	30,001-50,000 vs. 10,000-30,000	**0.0530**	**0.408**	**0.164**	**1.012**
		50,001 > vs. 10,000-30,000	0.5129	1.347	0.552	3.288
		No income vs. 10,000-30,000	**0.0372**	**2.639**	**1.059**	**6.575**
	Religion	Islam vs. Christianity	0.1706	1.504	0.839	2.695
		Different answers vs. Christianity	**0.0575**	**3.574**	**0.960**	**13.302**
	Gender	Wife vs. Husband	0.1877	0.643	0.333	1.240
	Ethnicity	Kazakhs vs. Russians	0.2235	1.458	0.795	2.674
	Age	18-22 vs. 38-54	0.1052	0.401	0.133	1.211
		23-27 vs. 38-54	0.3025	0.653	0.291	1.467
		28-37 vs. 38-54	0.1863	0.642	0.333	1.239
3rd child						
	Region	South vs. North	**0.0057**	**1.789**	**1.185**	**2.702**
	Residence	Rural vs. Urban	0.4316	1.191	0.770	1.841
	Education	College vs. Secondary school	0.6894	0.897	0.525	1.530
		Higher education vs. Secondary school	0.4036	1.269	0.726	2.217
	Income	30,001-50,000 vs. 10,000-30,000	**0.0025**	**0.441**	**0.259**	**0.750**
		50,001 > vs. 10,000-30,000	0.2958	0.703	0.363	1.361
	Religion	Islam vs. Christianity	**<.0001**	**2.524**	**1.700**	**3.747**
	Gender	Wife vs. Husband	0.0742	0.669	0.431	1.040
	Ethnicity	Kazakhs vs. Russians	**<.0001**	**2.556**	**1.689**	**3.867**
	Age	18-22 vs. 38-54	0.9289	1.028	0.558	1.894
		23-27 vs. 38-54	0.4620	1.217	0.721	2.055
		28-37 vs. 38-54	0.4125	0.823	0.516	1.312

Tab. 35 Impact of region, residence, education, income, religion, gender, ethnicity, and age on planned number of children; North and South Kazakhstan… continue

4th +						
	Region	South vs. North	**<.0001**	**8.384**	**4.887**	**14.385**
	Residence	Rural vs. Urban	0.5256	1.183	0.705	1.985
	Education	College vs. Secondary school	0.2726	0.696	0.364	1.330
		Higher education vs. Secondary school	0.8829	1.050	0.546	2.023
	Income	30,001-50,000 vs. 10,000-30,000	**0.0045**	**0.415**	**0.226**	**0.761**
		50,001 > vs. 10,000-30,000	**0.0303**	**0.411**	**0.184**	**0.919**
		Difficult to answer vs. 10,000-30,000	**0.0310**	**0.087**	**0.009**	**0.799**
	Religion	Islam vs. Christianity	**<.0001**	**18.086**	**10.504**	**31.140**
	Gender	Wife vs. Husband	0.0642	0.613	0.365	1.029
	Ethnicity	Kazakhs vs. Russians	**<.0001**	**21.976**	**12.123**	**39.839**
	Age	18-22 vs. 38-54	0.4360	0.764	0.388	1.505
		23-27 vs. 38-54	0.3483	1.289	0.758	2.193
		28-37 vs. 38-54	0.9935	0.998	0.628	1.585

Note: multinomial logistic regression, statistical significant results at $p \leq 0.05$ level are presented in bold for each variable and for its respective categories; reference category of the dependent variable is planned number of 2 children. Source: Survey "Reproductive behavior of a family of Kazakhstan", 732 respondents (males and females), own calculations

Urban-rural differentiation was found insignificant what may be influenced by the responses of the respondents living in North Kazakhstan since in South Kazakhstan dissimilarities in reproductive plans by the place of residence occurred in the descriptive analysis and its effect in multinomial regression analysis. For South region it was found separately as well.

Educational attainment as a factor did not appear to be important for both observed regions. However, family income plays a considerable role in planning one, three and four children. As seen from table 35 the respondents belonging to the middle class are at 0.408 (1/0.408 = 2.4) risk to have one child which means that poor families have 2.4 times higher odds ratio in planning to have one child in contrast to the families belonging to middle class. Also, the respondents who have posed not to have their own income have 2.6 times higher odds ratio in planning one child.

A prove to the assumption that families with low income plan to have more children has been revealed in the finding concerning three children as odds is 0.441 (1/0.441 = 2.3) among the respondents with relatively higher income versus those with lower earnings what indicates that families with low income demonstrate 2.3 times higher odds ratio in comparison with families of middle class. With reference to four children it has become evident that couples with low income intend to have large families with 2.4 times higher odds ratio than the respondents with relatively higher income and well-off families as well (odds ratio is 0.415, 30,001-50,000 national currency (tenge) vs. 10,000-30,000 tenge) (odds ratio is 0.411, 50,001 and above national currency (tenge) vs. 10,000-30,000 tenge). The interest is induced by the result with the risk of 0.087 (1/0.087 = 11.4) in having four children by those who found the question about family income difficult to answer versus those earning less which means that families with low income have 11.4 times higher odds ratio when planning to have four and more children.

Religious and ethnic factors have indicated the significance to a considerable extent as it happened in the previous analyses. According to religious differences, Muslim families in

comparison with Christian families considered to plan three and four children with 2.5 and 18.0 times higher odds respectively. Furthermore, the respondents who replied as "different answer" showed 3.5 times higher odds with regards to one child in favor of Muslim families. These findings have revealed that Christian families plan to have one child even less often than the respondents who do not consider themselves religious. Besides, reproductive plans to have large family are relatively less frequent among Christian couples than among Muslim ones.

On the subject of ethnic differences it has been confirmed that Kazakh couples in contrast to the Russians intend to have families with three and more children. The odds ratio for three children is 2.5 times higher and for four children 21.9 times higher among Kazakh families versus Russian ones.

Age factor appeared to be insignificant in planning one, three and four children, though it has demonstrated the difference in no plans to have children with 0.112 (1/0.112 = 8.9) risks among the respondents at the age of 23-27 versus 38-54 year old respondents what indicates 8.9 times higher odds ratio vice versa. As it has been mentioned before there is a considerable number of childless respondents at the age of 40 and above and most likely due to their last stages of reproductive period they do not plan to have children what contradicts the plans of the respondents at the age of 23-27 years.

Sex factor did not show any differences what implies that reproductive intentions of males and females are more or less similar.

The analysis of reproductive plans of the couples living in South and North Kazakhstan has revealed that intentions to have more children are relatively predominant among the respondents from South Kazakhstan. Reproductive intentions of the respondents are mostly related to two children, especially among the couples from North Kazakhstan. In South Kazakhstan two children was the most frequent answer, however, there was a substantial amount of responses related to three and four children what means the respondents on average plan to have medium sized family with three children.

For the respondents from both regions ethnicity, religion and family income appeared to be the most important factors. Urban-rural differentiation is considerable among the respondents from South Kazakhstan.

7.4 Reproductive thoughts and their realization

Reproductive thoughts of individuals eventually determine their attitudes to have or not to have child/children. In the preceding sub-chapters reproductive attitudes have been thoroughly analyzed through ideals, preferences and intentions. These three categories as a result are realized in the form of fertility or existing reproductive behavior. In Chapter 3 the definition of reproductive behavior proposed by V.A. Borisov has identified it as a sequence of actions having impact on birth or denial of a child's birth in marriage or out of marriage (Borisov, 1976).

Thus, reproductive behavior appears as a result of actions towards childbearing and then reflects the real fertility. In this sub-chapter we have focused on the real number of children the respondents have in South and North Kazakhstan.

The analysis is presented following the structure proposed in Chapter 4 starting with descriptive observation and then examining the effects using multinomial logistic regression methods.

7.4.1 Real number of children among couples from North Kazakhstan

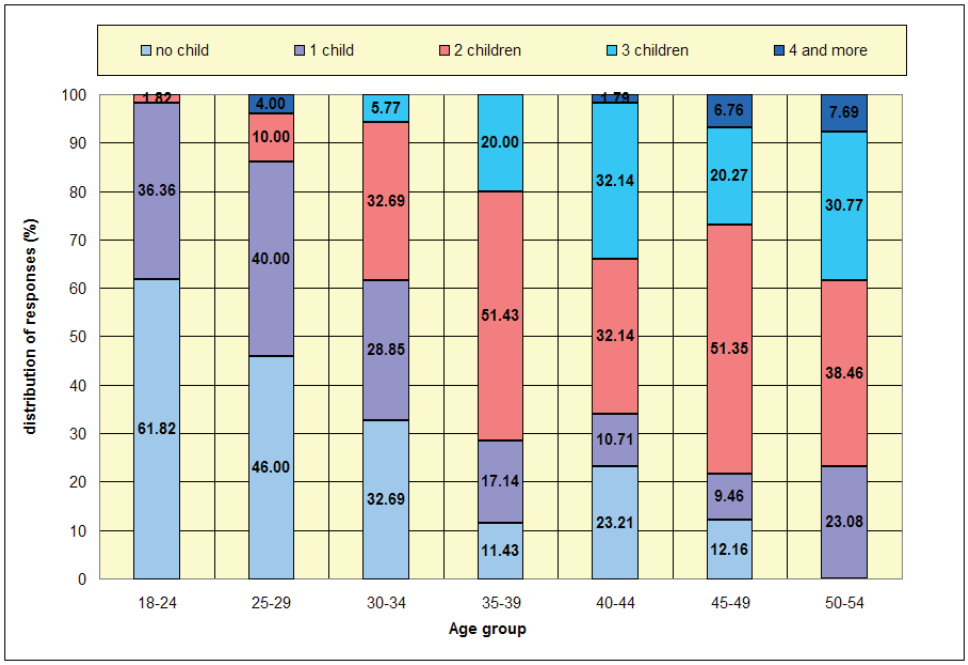
From reproductive intentions of the respondents in North Kazakhstan it has become evident that the majority of them do not plan to have more than two children. This means that couples living in North Kazakhstan have somewhat changed their reproductive behavior to that prevailing in the developed countries.

In this particular analysis it has been intended to understand how current reproductive behavior varies based on age differentiation, urban-rural belonging and ethnicity. Unlike with the analyses of reproductive ideals, preferences and intentions, in the study of reproductive behavior sex difference was excluded since the result would show no difference in the real number of children when questioning couples.

Age factor is significant (less than 0.0001) what is not surprising since the respondents at younger age have just started implementing their reproductive plans and at elder age they will have either implemented their lifetime fertility or intended to have one more birth. Considering that we can observe how current reproductive behavior is related to the planned number of children.

As displayed in figure 82, more than half of the youngest respondents (18-24 years old) are childless and 36.36 % of them have one child already. This directly indicates the fact that the majority of the respondents shift their first birth to a later age. Hence, 50.94 % of them plan to have two children, 26.42 % posed three children as their plan and only 7.55 % (fig. 74) considered one child.

Fig. 82: Real number of children by age of the respondents (%), North Kazakhstan, 2007,



Note: Statistical significance of total data set $p < 0.0001$, own calculations

Source: Survey "Reproductive behavior of a family of Kazakhstan", 348 respondents (males and females)

With reference to the age group of 25-29 years old, 46.00 % of them are childless and 40.00 % have one child, though their reproductive intentions to have two children (48.94 %) appeared frequently (fig. 74). The respondents at the age of 30-34 have more or less carried out their reproductive plans (one child- 24.00 %, two children - 50.00 % and three children - 18.00 %, fig. 74). Despite that 32.69 % of them are childless what is considered to be a substantial number taking into account the age of the respondents.

The respondents at the age of 35-39 seem to be very optimistic in their reproductive intentions (15.15 % plan to have four children, fig. 74) and considerable part of their reproduction with one, two and three children has already been implemented. Yet, the alarming fact is that 11.43 % of them are still childless at the age of 35-39 and they plan to have child/children at a relatively later age due to the reproductive period. Such evidence may have circumstances and reasons behind.

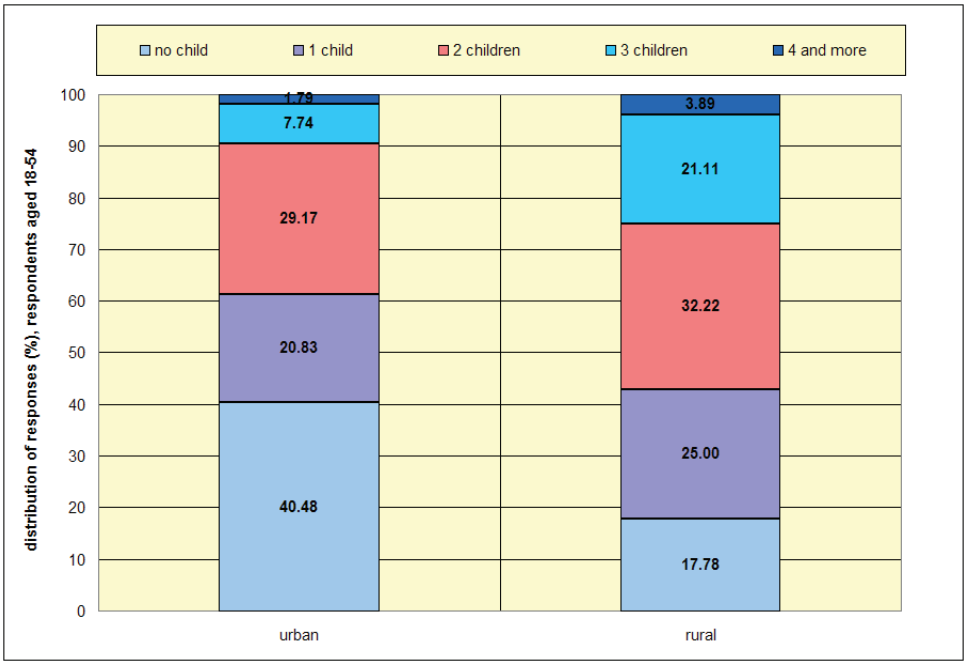
Real number of children among the respondents at the age of 40-44 relatively corresponds to their reproductive plans, but for this group the question of childlessness remains relevant as well as for those at the age of 35-39 years. In figure 82 it is demonstrated that 23.21 % of the respondents aged 40-44 positioned themselves as childless, 7.69 % (fig. 74) do not plan to have a child and the rest intend to have the first child between the age of 40 and 44 or even later.

The relation between reproductive intentions and current reproduction of the respondents at the age of 45-49 is similar to those at the age of 40-44, and even they (the respondents aged 45-49) plan to have a child as 12.16 % (fig. 82) are childless and only 1.41 % (fig. 74) do not plan to have a

child. The eldest group of the respondents due to their age has already implemented all their reproductive plans.

Current reproduction among the couples living in North Kazakhstan has a divergence based on urban-rural belonging but the planned number of children did not appear to be significant and exposed somewhat proximate opinions between urban and rural respondents. The analysis of the real number of children has revealed the significance by the place of residence (less than 0.0001) what can be noted through the dissimilarity of childless respondents in urban (40.48 %) and rural (17.78 %) areas (fig. 83).

Fig. 83: Real number of children by the place of residence of the respondents (%), North Kazakhstan, 2007,



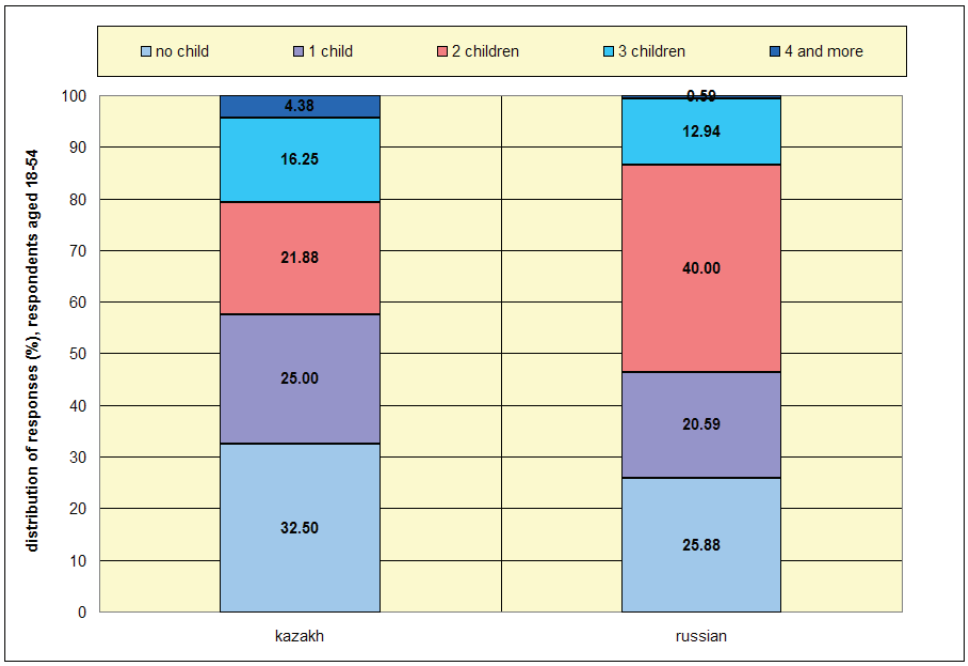
Note: Statistical significance of total data set $p < 0.0001$, own calculations

Source: Survey "Reproductive behavior of a family of Kazakhstan", 348 respondents (males and females)

Considerable difference between urban and rural reproduction is also related to three children which is higher by 13.37 % in favor of rural couples.

In the descriptive analysis of reproductive intentions it was noted that Kazakh and Russian couples living in North Kazakhstan have a convergence in the planned number of children. Current reproduction though has shown some difference, and significance of the ethnic factor has been determined (0.0057).

Fig. 84: Real number of children by ethnicity of the respondents (%), North Kazakhstan, 2007,



Note: Statistical significance of total data set p = 0.0057, own calculations

Source: Survey "Reproductive behavior of a family of Kazakhstan", 348 respondents (males and females)

Ethnic factor in fertility has been widely examined by V. Agadjanian (Agadjanian, 1999, 2008, 2012) who has found that Kazakh women get married relatively later than Russian women and ultimately the first birth gets shifted. It has been revealed in our finding as well; childless couples prevail among the Kazakhs at 6.62 %. Considerable difference between the Kazakh and the Russian fertility is related to two children in favor of Russian couples with a discrepancy at 18.12 %. However, large families happen to exist among the Kazakhs in North Kazakhstan to some extent as four children category prevailed by 3.79 % in contrast to the Russians.

According to ethnic differentiation, families with two children dominate among the Russians while Kazakh couples have almost similar distribution of fertility within one and two children.

The descriptive analysis of the real number of children among the couples from North Kazakhstan has revealed that age factor plays a significant role: two younger groups of the respondents (18-24 and 25-29 years old) have one child on average, age group of 40-44 years old have mostly two and three children, the other age groups have mainly two children.

The analysis of the current fertility by age factor has brought to light the fact that considerable number of childless couples are at their active reproductive age and at later stage of reproductive period. This fact needs more attention and further analysis.

Difference by to place of residence has shown that families with more children are mainly from rural area not urban. Most of the urban respondents do not have children yet and the other

considerable part of them has two children. With regards to ethnic differentiation, two children is mostly common among the Russians while the Kazakh couples have less families with two children, though they prevail in the number of families with one, three and four children in contrast to the Russian couples.

7.4.2 Real number of children among couples from South Kazakhstan

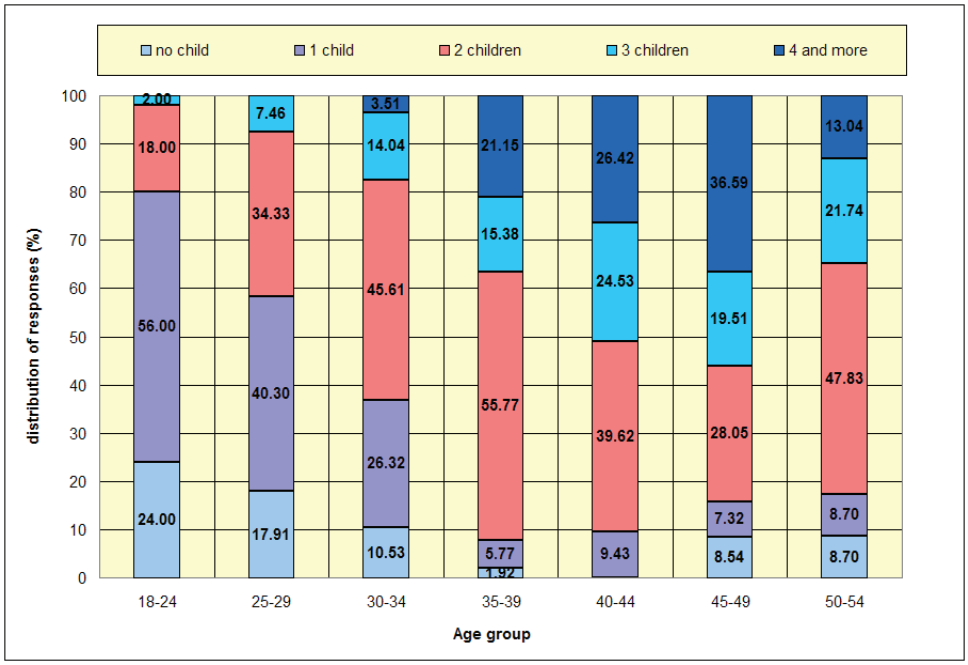
Being the main object of the research, reproductive behavior in South Kazakhstan holds the special attention. From the preceding sub-chapters it has become evident that reproductive ideals and preferences of the respondents living in South Kazakhstan remain positive towards large families (mostly four children), however, reproductive plans appear to be slightly less positive. Though, in the analyzed region almost nobody intends to have one child since most of the plans concern two children and three and four children to some extent.

Real number of children has revealed the situation with the current reproduction and has given the opportunity to compare it with reproductive intentions.

The analysis of reproductive behavior in South Kazakhstan follows the same structure as in North Kazakhstan. Starting with the real number of children the respondents have, based on their age-related differences.

Age factor has significance at less than 0.0001 what specifies that there are dissimilarities in the real number of children between the respondents according to their age. At a first glance the respondents at the age of 30 and above have two children at most except for the 45-49 year old respondents who have mostly four children (36.59 %) (fig. 85). The majority of the respondents from the two youngest (18-24 and 25-29 years old) groups have one child.

Fig. 85: Real number of children by age of the respondents (%), South Kazakhstan, 2007,



Note: Statistical significance of total data set $p < 0.0001$, own calculations

Source: Survey "Reproductive behavior of a family of Kazakhstan", 384 respondents (males and females)

It should be noted that the percentage of childless couples is comparably less among the respondents from South Kazakhstan than from North Kazakhstan. For instance, the proportion of childless respondents among the youngest generation (18-24 years old) is 24.00 %, whereas in North Kazakhstan this number stands at 61.82 %. These finding shows that people from South Kazakhstan get married earlier and consequently give the first birth at an early stage. As for reproductive intentions, the youngest group of the respondents expressed positive attitude towards three children.

The respondents at the age of 25-29 mainly intend to have two children but this group in comparison with the three young generations (18-24, 25-29 and 30-34 years old) has more positive attitude to large families with five and more children (11.94 %). Furthermore, plans of having four children represent a quarter of the respondents' answers in each group (18-24, 25-29 and 30-34 years old).

Current reproduction has shown that the respondents at the age of 25-29 have mostly implemented their first and second births and the respondents at the age of 30-34 have partially implemented their second birth.

Analysis of the current fertility among the 35-39 year old respondents from South Kazakhstan and its comparison with their reproductive intentions provide an opportunity to conclude that birth at later age is a common occasion in this region. Since 55.77 % (fig. 85) of the respondents from this age group have two children already and their reproductive intentions revealed that 26.00 % of

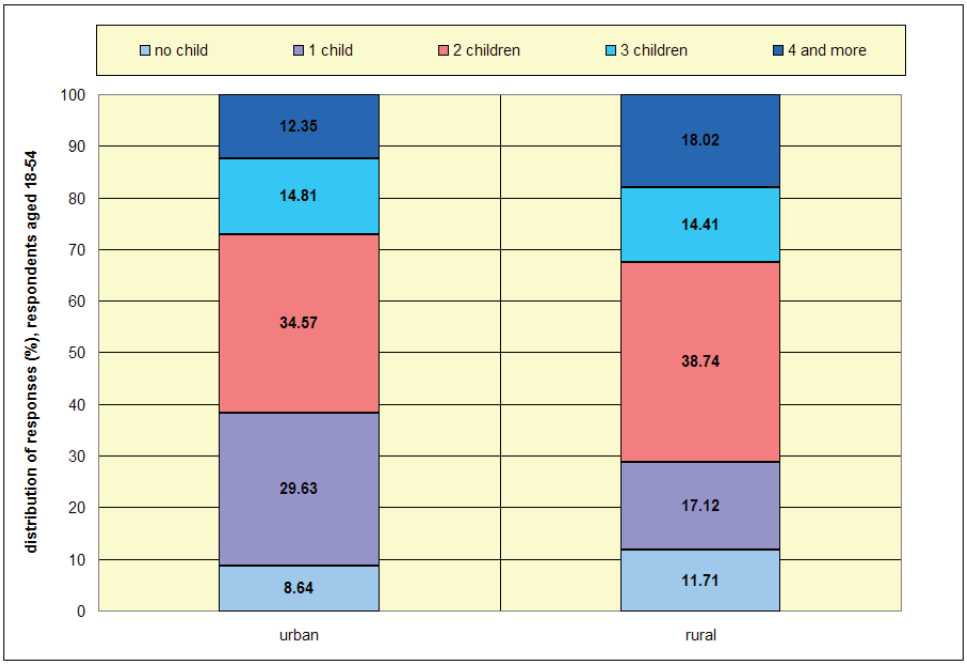
them want to have three children, 30.00 % four children and 14.00 % (fig. 78) five and more children.

Planned number of births at latest reproductive ages is also related to the respondents at the age of 40 and above as 15.09 % (40-44 years old), 18.29 % (45-49 years old) and even 8.70 % (50-54 years old) (fig. 78) plan to have five and more children but still there is not even a single couple who has reached their intentions (fig. 85). Such finding is incredible, especially with regards to the 50-54 year old respondents, though according to statistical data there were a few cases when females have given birth at the age of 50 and even 54 years. There is no assurance that all reproductive intentions made by the respondents would be realized. Therefore, it may relate to some kind of "unrealistic optimism" (Sobotka, 2011) of the respondents.

The result of the analysis by urban-rural belonging has identified insignificance (0.0842) what has revealed that reproductive behavior nowadays is more or less similar in urban and rural areas. This behavior is most likely based on the traditional background of South Kazakhstan and does not differ greatly due to strong family ties that are widespread and create a link between urban and rural areas. It would be difficult to find a person living in urban area (in the researched region) who does not have relatives from rural area. Like it has been mentioned above the convergence between urban and rural areas in South Kazakhstan is a result of family foundations (Valitova, 2010).

As seen from figure 86, families with two children appear quite frequently in urban as well as in rural areas. Through this finding it has become evident that reproductive behavior has somewhat changed in rural area of South Kazakhstan. There are many factors that leaven and to some extent determine the new reproductive behavior. Those include historical (collapse of the USSR, new government, new way of life), economic (crisis and then stability) and social factors (migration from rural to urban areas in search of education and jobs has started by the generation born in the 1970s).

Fig. 86: Real number of children by the place of residence of the respondents (%), South Kazakhstan, 2007,



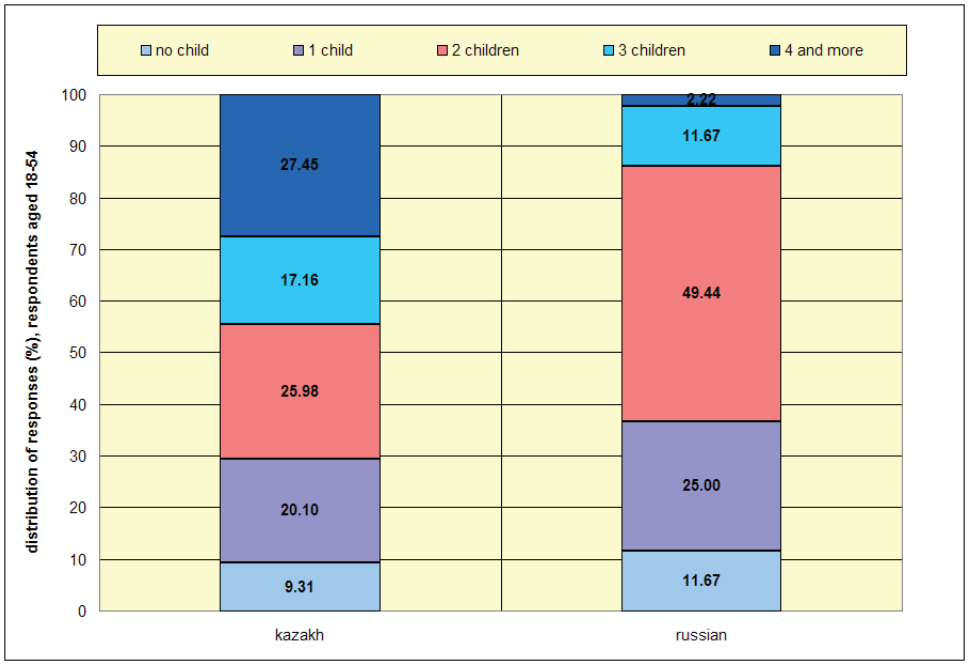
Note: Statistical significance of total data set p = 0.0842, own calculations

Source: Survey "Reproductive behavior of a family of Kazakhstan", 384 respondents (males and females)

Despite the aforementioned reasons, some people in rural area maintain reproductive behavior with a view for large family since the analysis has revealed that the number of the rural respondents having four and more children is 5.67 % higher. The number of urban respondents having one child on their turn is 12.51 % higher.

With reference to ethnic differentiation, it can be noted that this factor still plays the most important role in reproductive behavior of the respondents and its significance has been determined at less than 0.0001 (fig. 87). It is seen from the differences in two, four and more children (the number of the Russian couples with two children is 23.46 % higher compared to the Kazaks (fig. 87). Meanwhile the number of the Kazakhs which have four and more children is 25.23 % higher in contrast to the Russians (fig. 87).

Fig. 87: Real number of children by ethnicity of the respondents (%), South Kazakhstan, sample, 2007,



Note: Statistical significance of total data set $p < 0.0001$, own calculations

Source: Survey "Reproductive behavior of a family of Kazakhstan", 384 respondents (males and females)

Thus, the overall analysis of reproductive behavior in the South Kazakhstan region has displayed that most of the respondents by now have two children. Nevertheless, age factor plays an essential role among all age groups, the respondents at the age of 45-49 (born during the Soviet time), for example, have mainly four children. Two younger groups (18-24 and 25-29 years old) have families with one child. Urban-rural differences in South Kazakhstan are not that strong any more, though fertility has not shifted to small family size and is maintained at medium size.

As a result of historical and cultural foundations, Kazakh and Russian couples keep the old reproductive attitudes they have experienced from their parents and siblings, therefore ethnic factor has demonstrated significance.

7.4.3 Effect of real number of children among North and South couples

Reproductive behavior as the main object of the study has been scrupulously analyzed through multinomial regression method. The method was entitled to help us understand the effect of reproductive behavior based on the independent factors such as: urban-rural belonging, educational attainment, family income, religious affiliation and ethnical as well as age-related differences.

The analysis has a similar structure which was used in examining reproductive ideals, preferences and intentions with the discrepancy in reference category (Chapter 4) and sex difference excluded. As it was explained in the descriptive analysis above, it does not make sense to use sex difference with the real number of children since only couples, not individuals separately, participated in the

survey. As for the category "0" number of children or "no children", it has been selected since there are a considerable number of couples without children and it is interesting to observe the relation referring to the childless respondents.

Starting with couples from North Kazakhstan (Model 1, Chapter 4) it has been found that urban-rural belonging, religious affiliation, ethnicity, age-related differences and to some extent family income along with the educational factor happens to be significant.

The effect of the real number of children by the place of residence has demonstrated that rural respondents have higher odds of having children in each considered birth order. Furthermore, the expectation that rural families have more children in contrast to urban has been proven with the odds ratio of three, four and more children (tab.36).

Tab. 36 Impact of residence, education, income, religion, ethnicity, and age on real number of children; North Kazakhstan

		Effect	P-value	Odds ratio	Confidence limits	
1st child						
	Residence	Rural vs. Urban	**0.0010**	**2.870**	**1.532**	**5.375**
	Education	College vs. Secondary school	0.1822	1.800	0.759	4.272
		Higher education vs. Secondary school	0.7716	0.879	0.367	2.103
	Income	30,001-50,000 vs. 10,000-30,000	0.0650	0.457	0.199	1.050
		50,001 > vs. 10,000-30,000	**0.0049**	**0.217**	**0.075**	**0.629**
	Religion	Islam vs. Christianity	0.8575	0.946	0.517	1.733
	Ethnicity	Kazakhs vs. Russians	0.6628	0.870	0.466	1.625
	Age	18-22 vs. 38-54	0.3192	0.645	0.272	1.529
		23-27 vs. 38-54	0.5095	0.741	0.304	1.805
		28-37 vs. 38-54	0.7363	1.159	0.490	2.743
2nd child						
	Residence	Rural vs. Urban	**<.0001**	**4.085**	**2.036**	**8.198**
	Education	College vs. Secondary school	0.3432	1.457	0.669	3.171
		Higher education vs. Secondary school	**0.0272**	**0.405**	**0.181**	**0.903**
	Income	30,001-50,000 vs. 10,000-30,000	0.2277	0.635	0.304	1.328
		50,001 > vs. 10,000-30,000	0.1430	0.534	0.230	1.237
		Difficult to answer vs. 10,000-30,000	**0.0034**	**0.123**	**0.030**	**0.500**
	Religion	Islam vs. Christianity	**0.0041**	**0.437**	**0.248**	**0.768**
	Ethnicity	Kazakhs vs. Russians	**0.0014**	**0.331**	**0.168**	**0.651**
	Age	18-22 vs. 38-54	0.9842	0.000	<0.001	>999.999
		23-27 vs. 38-54	**<.0001**	**0.062**	**0.021**	**0.181**
		28-37 vs. 38-54	0.0617	0.487	0.229	1.036
3rd child						
	Residence	Rural vs. Urban	**<.0001**	**9.550**	**3.961**	**23.025**
	Education	College vs. Secondary school	0.3143	1.626	0.631	4.190
		Higher education vs. Secondary school	0.4984	0.709	0.263	1.916
	Income	30,001-50,000 vs. 10,000-30,000	**0.0040**	**0.215**	**0.075**	**0.613**
		50,001 > vs. 10,000-30,000	**0.0037**	**0.136**	**0.035**	**0.522**
	Religion	Islam vs. Christianity	0.7190	0.883	0.448	1.739
	Ethnicity	Kazakhs vs. Russians	0.3388	0.665	0.289	1.534
	Age	18-22 vs. 38-54	0.9885	0.000	<0.001	>999.999
		23-27 vs. 38-54	0.9876	0.000	<0.001	>999.999
		28-37 vs. 38-54	**0.0019**	**0.219**	**0.084**	**0.570**

Tab. 36 Impact of residence, education, income, religion, ethnicity, and age on real number of children; North Kazakhstan… continue

4th child						
	Residence	Rural vs. Urban	**0.0510**	**4.620**	**0.993**	**21.489**
	Education	College vs. Secondary school	0.5546	1.590	0.341	7.411
		Higher education vs. Secondary school	0.1715	0.192	0.018	2.044
	Income	30,000-50,000 vs. 10,000-30,000	0.1547	0.298	0.056	1.579
		50,000 > vs. 10,000-30,000	0.9533	0.000	<0.001	>999.999
	Religion	Islam vs. Christianity	0.3418	1.981	0.484	8.112
	Ethnicity	Kazakhs vs. Russians	0.1744	4.507	0.513	39.579
	Age	18-22 vs. 38-54	0.9940	0.000	<0.001	>999.999
		23-27 vs. 38-54	0.0847	0.218	0.039	1.232
		28-37 vs. 38-54	0.9906	0.000	<0.001	>999.999

Note: multinomial logistic regression, statistical significant results at $p \leq 0.05$ level are presented in bold for each variable and for its respective categories; reference category of the dependent variable is real number of no child (0). Source: Survey "Reproductive behavior of a family of Kazakhstan", 348 respondents (males and females), own calculations

The analysis has shown that the rural respondents have 2.8 times higher odds ratio in one child, 4.0 times higher in two children, 9.5 times higher in three and 4.6 times higher in four and more children (tab.36). This finding clearly indicates the prevalence of rural respondents in the real number of children.

From the descriptive analysis it has been found that couples from North Kazakhstan regardless of their ethnicity have mainly two children, therefore the effect of odds ratio has not appeared in three, four and more children. Yet, the number of the Russians with two children is 3.0 times higher than the number of the Kazakhs. This effect is there also due to religious affiliation of the respondents when the number of Christian couples having two children is 2.3 times higher in contrast to Muslim couples (tab.36).

Age as a factor did not play any role in reproductive preferences as well as intentions, though current reproduction has demonstrated age-related significance. The eldest group of the respondents prevailed in having two and three children: odds ratio for two children is 0.062 which means it is 16.1 times higher among the respondents at the age of 38-54 versus 23-27 year old, and odds ratio for three children is 0.219 what indicates that the number of eldest group is 4.5 times higher versus those at age of 28-37 (tab.36).

Family income as a factor has shown the effect particularly in three children proving that families with low income have more children. Odds ratio for three children is 0.215 (1/0.215 = 4.6) (30,001-50,000 national currency (tenge) vs. 10,000-30,000 tenge) which means that the number of those who earn lower income is 4.6 times higher. Another odds ratio for three children is 0.136 (1/0.136 = 7.3) (50,001 and above national currency (tenge) vs. 10,000-30,000 tenge) what evinces that the number of families with low income is 7.3 times higher (tab.36).

Findings related to financial factor have revealed unexpected results as well-off families more or less adhere to so-called "quality of child" (Becker and Lewis, 1973) but the outcome of the survey is such that the respondents with low income compared to well-off respondents have 4.6 times higher odds of having one child (odds ratio is 0.217 (1/0.217 = 4.6), 50,001 and above national

currency (tenge) vs. 10,000-30,000 tenge). Another interesting fact is that the respondents who found the question about their monthly income to be "difficult to answer" have demonstrated odds value at 0.123 which means that the number of the couples with low income having two children is 8.1 times higher in contrast to those who have replied "difficult to answer".

The assumption that highly educated people have small families compared to those with primary education has not been proven. The only significance has occurred with two children where odds ratio is 0.405 (1/ 0.405 = 2.4) among the respondents with higher education versus those with secondary education what has 2.4 times higher odds ratio in an inverse relation.

Multinomial analysis of the real number of children among the respondents living in North Kazakhstan has demonstrated the substantial effects related to urban-rural and age-related differentiations and comparative differences by ethnicity, religious affiliation and family income of the respondents.

From the descriptive analysis it has become evident that reproductive behavior between the two observed regions (North and South Kazakhstan) differs, therefore the effects of independent factors in comparison with the real number of children would most probably have discrepancies. For instance, for the respondents from North Kazakhstan urban-rural differentiation plays a significant role, whereas for couples living in South Kazakhstan it is not quite significant while the only case has appeared in consideration of one child among the urban respondents. Since odds ratio for having one child is 0.417 with rural respondents versus urban, it indicates that the number of urban couples with one child is 2.4 times higher (tab.37).

Ethnic and religious factors have a sharp distinction among the respondents from South Kazakhstan. Muslim families have 3.0 times higher odds ratio of having three children and 23.9 times higher ratio of having four and more children compared to Christian families. This differentiation has taken place in ethnic factor as well since Kazakh couples have 3.7 times higher odds for three children and 44.6 times higher odds for four and more children (tab.37).

As for family income, for Southern respondents it is not quite significant as it is for Northern respondents. The only case is related to three children in relation to well-off couples versus couples with low income with 5.2 times higher odds ratio.

Effects related to educational factor have not shown significance in any birth order, but the evidence has appeared in four and more children proving the assumption that the respondents without higher education have more children. The odds ratio is 0.340 (1/0.340 = 2.9) (higher education versus secondary education) which means that the number of the respondents with secondary education having four and more children is 2.9 times higher than the number of those who have graduated from the university.

Tab. 37 Impact of residence, education, income, religion, ethnicity, and age on real number of children; South Kazakhstan

		Effect	P-value	Odds ratio	Confidence limits	
1st child						
	Residence	Rural vs. Urban	**0.0335**	**0.417**	**0.186**	**0.934**
	Education	College vs. Secondary school	0.4044	1.662	0.503	5.490
		Higher education vs. Secondary school	0.5401	1.366	0.504	3.703
	Income	30,001-50,000 vs. 10,000-30,000	0.5044	0.728	0.287	1.848
		50,001 > vs. 10,000-30,000	0.5010	1.551	0.432	5.566
	Religion	Islam vs. Christianity	0.9772	1.012	0.451	2.270
	Ethnicity	Kazakhs vs. Russians	0.7261	1.154	0.517	2.575
	Age	18-22 vs. 38-54	0.7255	1.248	0.362	4.309
		23-27 vs. 38-54	0.2716	1.842	0.620	5.472
		28-37 vs. 38-54	0.2444	2.014	0.620	6.548
2nd child						
	Residence	Rural vs. Urban	0.8809	1.061	0.489	2.304
	Education	College vs. Secondary school	0.1541	2.196	0.744	6.476
		Higher education vs. Secondary school	0.3645	0.651	0.257	1.647
	Income	30,001-50,000 vs. 10,000-30,000	0.4236	1.418	0.603	3.337
		50,001 > vs. 10,000-30,000	0.6554	1.333	0.377	4.710
	Religion	Islam vs. Christianity	0.8416	0.925	0.430	1.989
	Ethnicity	Kazakhs vs. Russians	0.9385	0.970	0.446	2.109
	Age	18-22 vs. 38-54	**0.0004**	**0.088**	**0.023**	**0.334**
		23-27 vs. 38-54	**0.0127**	**0.283**	**0.105**	**0.764**
		28-37 vs. 38-54	0.8664	1.092	0.390	3.060
3rd child						
	Residence	Rural vs. Urban	0.9131	1.052	0.422	2.620
	Education	College vs. Secondary school	0.4402	1.611	0.480	5.402
		Higher education vs. Secondary school	0.0607	0.354	0.119	1.048
	Income	30,001-50,000 vs. 10,000-30,000	0.7908	1.156	0.396	3.377
		50,001 > vs. 10,000-30,000	**0.0155**	**5.227**	**1.370**	**19.945**
	Religion	Islam vs. Christianity	**0.0165**	**3.021**	**1.224**	**7.457**
	Ethnicity	Kazakhs vs. Russians	**0.0050**	**3.785**	**1.495**	**9.582**
	Age	18-22 vs. 38-54	0.9926	0.000	<0.001	>999.999
		23-27 vs. 38-54	**<.0001**	**0.069**	**0.019**	**0.247**
		28-37 vs. 38-54	0.0725	0.343	0.107	1.103
4th child						
	Residence	Rural vs. Urban	0.1095	2.316	0.828	6.475
	Education	College vs. Secondary school	0.0851	2.960	0.861	10.176
		Higher education vs. Secondary school	**0.0576**	**0.340**	**0.112**	**1.035**
	Income	30,001-50,000 vs. 10,000-30,000	0.8692	0.917	0.325	2.585
		50,001 > vs. 10,000-30,000	0.8673	0.873	0.177	4.299
	Religion	Islam vs. Christianity	**<.0001**	**23.984**	**6.884**	**83.559**
	Ethnicity	Kazakhs vs. Russians	**<.0001**	**44.625**	**12.056**	**165.176**
	Age	18-22 vs. 38-54	0.9904	0.000	<0.001	>999.999
		23-27 vs. 38-54	0.9813	0.000	<0.001	>999.999
		28-37 vs. 38-54	**0.0009**	**0.117**	**0.033**	**0.414**

Note: multinomial logistic regression, statistical significant results at $p \leq 0.05$ level are presented in bold for each variable and for its respective categories; reference category of the dependent variable is real number of no child (0). Source: Survey "Reproductive behavior of a family of Kazakhstan", 384 respondents (males and females), own calculations

Age factor has been determined to be significant since the eldest group (38-54 years old) of the respondents has already implemented their lifetime reproduction while younger groups have not. Families with two children have odds ratio of 0.088 (1/0.88 = 11.3) (respondents at the age of 18-22 vs. 38-54 years old) what means that the number of the couples belonging to the eldest group and having two children has 11.3 times higher odds ratio. Such correlation occurred between the other two age groups as well (23-27 and 38-54 years old) with odds ratio of 0.283 (1/0.283 = 3.5) what shows that the eldest group with two children has 3.5 times higher odds ratio.

Three, four and more children have also displayed the differences based on the age of the respondents in favor of the eldest group (38-54 years old) with 14.4 times higher odds ratio (odds is 0.069, respondents at the age of 23-27 vs. 38-54 years old) for three children and 8.5 times higher ratio (odds is 0.117, respondents at the age of 28-37 vs. 38-54 years old) for four and more children. From these findings it is evident that age factor plays a significant role with respect to the time of childbearing in South Kazakhstan.

Overall analysis of reproductive behavior among the respondents from South Kazakhstan has demonstrated influential and considerable effects taking place based on the age-related differences, religious affiliation and ethnicity.

Following the structure proposed in Chapter 4 it was aimed to analyzed reproductive behavior within the two regions (North and South Kazakhstan) together (Model 2, Chapter 4). The main purpose is to find out the differences based on regional aspect and then to observe which of the independent factors have more influence on reproductive behavior of the respondents in North and South Kazakhstan.

Regarding regional aspect, the respondents from South Kazakhstan have demonstrated prevalence in each birth (in forth and more children in particular) opposed to the couples from North Kazakhstan. Odds ratio for one child is 2.8 times higher in favor of the couples living in South Kazakhstan, for two children it is 4.0 times higher, for three children 4.8 times and for four children it is 43.6 times higher (tab.38).

The factor of the place of residence for both regions together has revealed significance in each birth (except for the first birth) but the prevalence of odds ratio is not considerably strong. Nevertheless, families with two and more children appear among the rural respondents more frequently than among the urban respondents. Odds ratio among the rural respondents versus urban is 2.0 times higher for two children, 2.6 times higher for three children and finally 2.8 times higher for four children (tab.38).

Tab. 38 Impact of region, residence, education, income, religion, ethnicity, and age on real number of children; North and South Kazakhstan

		Effect	P-value	Odds ratio	Confidence limits	
1st child						
	Region	South vs. North	**<.0001**	**2.892**	**1.737**	**4.813**
	Residence	Rural vs. Urban	0.7139	1.103	0.653	1.863
	Education	College vs. Secondary school	0.0602	1.965	0.971	3.975
		Higher education vs. Secondary school	0.7032	1.138	0.586	2.208
	Income	30,001-50,000 vs. 10,000-30,000	**0.0371**	**0.504**	**0.265**	**0.960**
		50,001 > vs. 10,000-30,000	**0.0195**	**0.403**	**0.188**	**0.864**
	Religion	Islam vs. Christianity	0.7545	0.930	0.588	1.469
	Ethnicity	Kazakhs vs. Russians	0.8427	0.951	0.580	1.560
	Age	18-22 vs. 38-54	0.5716	0.823	0.420	1.614
		23-27 vs. 38-54	0.4028	1.317	0.691	2.507
		28-37 vs. 38-54	0.2248	1.518	0.774	2.977
2nd child						
	Region	South vs. North	**<.0001**	**4.031**	**2.395**	**6.783**
	Residence	Rural vs. Urban	**0.0096**	**2.029**	**1.188**	**3.468**
	Education	College vs. Secondary school	0.3128	1.425	0.716	2.836
		Higher education vs. Secondary school	0.2291	0.667	0.345	1.290
	Income	30,001-50,000 vs. 10,000-30,000	0.3677	0.750	0.402	1.402
		50,001 > vs. 10,000-30,000	**0.0282**	**0.433**	**0.205**	**0.914**
		Difficult to answer vs. 10,000-30,000	**0.0185**	**0.218**	**0.061**	**0.774**
	Religion	Islam vs. Christianity	**0.0040**	**0.536**	**0.351**	**0.819**
	Ethnicity	Kazakhs vs. Russians	**0.0535**	**0.611**	**0.371**	**1.007**
	Age	18-22 vs. 38-54	**<.0001**	**0.032**	**0.011**	**0.086**
		23-27 vs. 38-54	**<.0001**	**0.200**	**0.108**	**0.370**
		28-37 vs. 38-54	0.3371	0.756	0.427	1.338
3rd child						
	Region	South vs. North	**<.0001**	**4.824**	**2.561**	**9.089**
	Residence	Rural vs. Urban	**0.0036**	**2.646**	**1.373**	**5.097**
	Education	College vs. Secondary school	0.9478	1.027	0.456	2.313
		Higher education vs. Secondary school	0.2406	0.619	0.278	1.379
	Income	30,001-50,000 vs. 10,000-30,000	**0.0254**	**0.398**	**0.178**	**0.893**
		50,001 > vs. 10,000-30,000	0.1864	0.552	0.229	1.332
	Religion	Islam vs. Christianity	0.4202	1.233	0.741	2.050
	Ethnicity	Kazakhs vs. Russians	0.0694	1.756	0.956	3.226
	Age	18-22 vs. 38-54	0.9699	0.000	<0.001	>999.999
		23-27 vs. 38-54	**<.0001**	**0.062**	**0.024**	**0.161**
		28-37 vs. 38-54	**0.0011**	**0.322**	**0.163**	**0.636**

Tab. 38 Impact of region, residence, education, income, religion, ethnicity, and age on real number of children; North and South Kazakhstan…continue

4th +						
	Region	South vs. North	**<.0001**	**43.614**	**16.482**	**115.409**
	Residence	Rural vs. Urban	**0.0157**	**2.833**	**1.217**	**6.595**
	Education	College vs. Secondary school	0.5905	1.313	0.487	3.545
		Higher education vs. Secondary school	0.1379	0.450	0.157	1.292
	Income	30,001-50,000 vs. 10,000-30,000	0.0678	0.419	0.165	1.066
		50,001 > vs. 10,000-30,000	**0.0008**	**0.097**	**0.025**	**0.380**
	Religion	Islam vs. Christianity	**<.0001**	**8.233**	**3.518**	**19.269**
	Ethnicity	Kazakhs vs. Russians	**<.0001**	**22.522**	**7.520**	**67.450**
	Age	18-22 vs. 38-54	0.9754	0.000	<0.001	>999.999
		23-27 vs. 38-54	**<.0001**	**0.027**	**0.006**	**0.121**
		28-37 vs. 38-54	**<.0001**	**0.178**	**0.077**	**0.412**

Note: multinomial logistic regression, statistical significant results at $p \leq 0.05$ level are presented in bold for each variable and for its respective categories; reference category of the dependent variable is real number of no child (0). Source: Survey "Reproductive behavior of a family of Kazakhstan", 732 respondents (males and females), own calculations

Having proved the expectations ethnic and religious differences stand to be significant. For instance, Russian couples have two children more frequently than the Kazakhs since odds ratio is 0.611(1/0.611 = 1.6) (Kazakhs versus Russians) which means there is 1.6 higher risk in an inverse relation. However, the Kazakhs showed prevalence in four children with 22.5 times higher odds ratio. Similar distribution is related to reproductive behavior based on religious factor: families with two children prevail among the Christian couples versus Muslims with 1.8 times higher odds ratio (odds ratio is 0.536 (1/0.536 = 1.8), Muslim families vs. Christian families). Meanwhile, the number of Muslim families having four and more children is 8.2 times higher than the number of the Christian families.

As for the effects based on family income it has been proven that families with low income have more children than those living in a more privileged situation. For instance, the number of couples with low income having four and more children is 10.3 times higher than the number of well-off couples (odds ratio is 0.097 (1/0.097 =10.3), 50,001 and above national currency (tenge) vs. 10,000-30,000 tenge). Three children also prevail among the families with low income by 2.5 times higher odds ratio (odds ratio is 0.398, 30,001-50,000 national currency (tenge) vs. 10,000-30,000 tenge). One and two children are frequent among the couples with low income as well: odds ratio is 0.504 among the middle class families versus low income families having one child which means that the risk is 1.9 times higher in an inverse relation. Such correlation is related to the effect between low income and well-off families having one child where odds ratio is 0.403 among well-off respondents versus the ones with low income which means that there is 2.5 times higher risk in an inverse relation. With regards to two children, families with low income have 2.3 times higher odds ratio compared to well-off families (odds ratio is 0.433 (1/0.433 = 2.3), 50,001 and above national currency (tenge) vs. 10,000-30,000 tenge) and 4.6 times higher odds ratio in contrast to those who found the financial question to be "difficult to answer" (odds ratio is 0.218 (1/0.218 = 4.6), difficult to answer vs. 10,000-30,000 tenge).

Differences by age factor have indicated that the fertility process is more or less complete among the eldest group (38-54 years old) of the respondents. Thus, odds ratio is 31.2 times higher among the eldest group with two children (38-54 years) versus the youngest group with the same number of children (18-22 years old) (odds ratio is 0.032, 18-22 vs. 38-54 years old) and 5.0 times higher among the eldest group versus those at the age of 23-27 (odds ratio is 0.200, 23-27 vs. 38-54 years old). Families with three children prevail among the eldest group by 16.1 times higher (odds ratio is 0.062 (1/0.062 = 16.1) , 23-27 vs. 38-54 years old) and 3.1 times higher odds ratio (odds ratio is 0.322, 28-37 vs. 38-54 years old). Differences in four children showed 37.0 times higher odds ratio among the eldest group versus those at the age of 23-27 (odds ratio is 0.027, 23-27 vs. 38-54 years old) and 5.6 times higher odds ratio compared to the 28-37 years old respondents (odds ratio is 0.178 (1/0.178 = 5.6), 28-37 vs. 38-54 years old). These findings have pointed out the importance of age factor.

Educational factor did not show any significance, what indicates that there is no relation between reproductive behavior and respondents' education. It may have some reason behind which needs to be analyzed thoroughly with. One of the possible options is that marriage and giving birth is of a higher priority for Kazakhstani people than education. Even higher educated people do not feel complete unless they are married.

The analysis of reproductive behavior has revealed that the respondents living in South Kazakhstan have relatively larger families opposed to the respondents from North Kazakhstan. For both the regions ethnic and religious factors play an important role. Reproductive behavior of the couples from North Kazakhstan differs due to urban-rural belonging, but in South Kazakhstan it has a convergence. In both regions families with low income have comparatively more children than those who earn slightly more and those considered as well-off families, but it is more prominent in South Kazakhstan in comparison with four and more children.

In general, reproductive behavior in Kazakhstan has been changing following demographic transition but in North Kazakhstan it seems to be faster than it appears in South Kazakhstan.

Conclusion

This study analyzed reproductive behavior of people living in South Kazakhstan and region's contribution to the fertility development to entire country. Additionally, changes in reproductive attitudes and current reproduction due to newly formed values in society towards modern way of life were determined. Moreover, the extents of "modernization" as well as influential factor of family ties and public opinion were examined in the traditional South region. As it was defined the traditional fertility in researched region has preserved among Turkic group of women, except Tatars who have fertility level below replacement. Among European group of women fertility level has also maintained at level below replacement and only Germans have had level of fertility slightly higher.

Despite that, current reproduction in South Kazakhstan remains substantial and makes considerable contribution to the fertility level of entire country. Recent increase of reproduction in South Kazakhstan and the entire country is based on fertility augmentation and not so much depends on the age, place of residence or birth order. However, age and birth order play a comparable role according to the ethnic differences in South, Turkic group of women enters to reproductive process later and gives birth on average to four babies until the latest age of reproductive period. The very opposite holds for European group of women, who start their reproduction earlier, but children have on average until their thirtieth birthday. Changes in reproductive behavior according to the marital status showed increase of extramarital fertility especially among youth, what implies that they have not accepted traditional reproduction patterns so much and have inclined to new ways in reproductive behavior. It was found out that the family institution is not as strong as it was centuries ago and during the Soviet period. Besides, the increase in age of mother at the first childbearing was documented. It indicates that fertility postponement took place. In the broad sense reproductive behavior is changing in South Kazakhstan as well as in entire country due to demographic transition. Recent increase in reproduction rates is related to the recuperative fertility that was proven for the rise of fertility in the second birth order among European group of women and at the third, four and higher birth order among Turkic groups of women. The substantial increase in the first births occurred among mother born in 1980s, the generation of "baby boom". Furthermore, the peak of highest fertility level belongs to 2008 (3.93 (children per woman), South Kazakhstan) and then the total fertility rate decreased (3.61(children

per woman) in 2009 and 3.67(children per woman) in 2010, South Kazakhstan). Those changes seem to be the first notes that indicate the final stages of the postponed fertility realization.

While analyzing the issue of reproductive behavior in South Kazakhstan, the reproductive problems such as higher level of infant and maternal mortality, increased number of stillbirths were found. All listed phenomena are related to several side problems identified by the poor medical care system, environmental conditions, maternal education and professionalism of medical employees. Thereby, the medical services need improvement and renovation in each region of Kazakhstan.

Supporting program of reproduction initiated by state, which was established in the year 2003, cannot cover necessities of individuals in order to carry out their reproductive preferences. As worldwide practice showed (Sweden, pro-egalitarian model), nowadays, it is much important to improve conditions and to create opportunity for families and individuals of being able to realize their reproductive intentions. Considering that reproductive intentions are based on four children in the rural South Kazakhstan.

The findings related to the reproductive attitudes among couples living in South Kazakhstan revealed that fertility preferences among couples maintain towards large family i.e. four children, however, plans are narrowed to two children. With regard to TPB theory we can conclude that on the level of personal or individual base couples of South Kazakhstan have higher behavioral beliefs, but normative and controlling bases are perceived as an obstacle. This finding corresponds also with the theoretical model of RWA, i.e. decreased reproductive intentions might appear due to ability of respondents. Ability for couples in research region was understood as a chain of many factors such as financial base or standards of living which are mostly correspond to economic factors. The economic factor showed its effect in reproductive intentions and real number of children. In respect of reproductive intentions families with lower wages plan to have more children rather than those who have better living condition. It seems that, the system of maximizing lifetime utility in low income countries (Schultz, 1997), the system of incentives in developing countries (Rosenzweig, 1990) proposed by T.P. Schultz and M. R. Rosenzweig and J.C. Caldwell's rational decision concerning number of children (Caldwell, 1976) are suitable to understand fertility development in researched region. Real number of children among couples living in South Kazakhstan equals two children, whereas only Kazakhs couples have four children in majority.

Effects of reproductive attitudes and their realization appeared due to urban-rural differentiation, regional base and due to a considerable extent by ethnic and religious variations. It showed that social environment has significant power. In South Kazakhstan, social network identified by the family communication, lineage groups, friends or colleagues corresponding to the elements of interaction proposed by G. McNicoll in developing countries where social characteristics seem to be encouraged high levels of fertility or its social control (McNicoll, 1980). Thereby, it is evident that the fertility preferences were formed by macro-micro perspective line in reproductive decisions which was proposed in fertility model of REPRO project (Sobotka, 2011).

With regard to modernized values (Giddens, 1990; Inglehart, 2005) and development level (Bongaarts and Watkins, 1996) we cannot conclude that they play relevant role to reproductive behavior of population in the research region. Since, the effect of educations showed a less significance while analyzing reproductive thought and realization of respondents or did not show it at all. It is deemed that in South Kazakhstan family ties, to be marry, to have a child/children are considered much important than education or professional life. That is proved by increased number of highly educated people, especially woman in the researched region who never works after getting degree. It makes us think that education, career rather de jure.

The gender effect appeared in reproductive preferences as well as plans related to reproductive behavior in traditional society in the same was as it is proposed in the theoretical concept of P. McDonald focused on gender equality or inequality. South Kazakhstani males declared desire and intentions to have large family more often than females (McDonald, 2000). This finding indicates that society still keep in mind traditional model of fertility. In respect of it the government has to pay more attention to supporting childbearing process.

Apropos of family ties and keeping in mind traditional reproductive view proved that intergenerational transmission in South Kazakhstan still more or less works between generations. The familial foundation has it power what fits to the model of life history theory and human reproductive behavior by K. McDonald (McDonald, 1997).

Conclusively, reproductive behavior and its pattern relatively changed towards so-called "modern" reproduction in researched region, however, reproductive thoughts and preferences maintain in traditional view. Recent increase in fertility related to compensative childbearing, while reproductive plans of respondents are not as optimistic as preferences what let us assumed that patterns of reproductive behavior would change towards families with two children. Assessing demographic problem and one of the main related to population size of Kazakhstan as the under populated state, we require improving conditions for families, working mothers, couples or individuals. Moreover, there is need to pay proper attention to the medical system and service in the region. Population is the main capital of state and children are the future of the country, therefore reproductive issue cannot be left unattended.

References

Ajzen, I. (1985). From intentions to actions: A theory of planned behavior. In J. Kuhl & J. Beckman (Eds.), *Action-control: From cognition to behavior* (pp. 11-39). Heidelberg: Springer.

Ajzen, I. (1991). The theory of planned behavior. Organizational Behavior and Human Decision Processes 50: 179-211

Ajzen, I. 2010. *Fertility intentions and the Theory of Planned Behaviour.* Paper presented at the Conference: "From intentions to Behaviour: Reproductive Decision Making in a Macro-Micro Perspective", Vienna, 2-3 December 2010. http://www.oeaw.ac.at/vid/in2b/

Agadjanian. V., (1999). Post-Soviet Demographic Paradoxes: Ethnic Differences in Marriage and Fertility in Kazakhstan. *Sociological Forum* 14(3): 425-446

Agadjanian. V., Dommaraju. P., and Glick. J., (2008). Reproduction in upheaval: Ethnic-specific fertility responses to societal turbulence in Kazakhstan. *Population Studies* 62(2): 211-233

Agadjanian. V., Dommaraju. P., and Nedoluzhko. L., (2012). *Diverging economic fortunes and fertility dynamics in central Asia: Kazakhstan and Kyrgyzstan compared* . Paper presented at the XII Mezhdunarodnaya nauchnaya konferenciya po problemam razvitiya economiki i obshestva. Moskva: 390-403

Abdykalikova, G., (2009). Koncepciya demographichaskoy politiki i ukrepleniya semi Respubliki Kazakhstan na 2010-2020 gody. Newspaper: Kazakhstanskaya Pravda, sept (2)

Agybayeva, G.A. (2006). Reproductivnoe povedenie zhenshin Respubliki Kazakhstan. In: Alekseenko, A.N. *Reproductivnye ustanovki zhenshin Vostochno-Kazakhstanskoy oblasti.* Ustkamenogorsk: 18-28

Alekseenko, A.N. (2001). Issledovaniya demographicheskix problem v Kazakhstane (1990-e gody) Paper presented in: Etnodemographicheskie processi v Kazakhstane i sopredelnix territorii, Materialy mezhdunarodnoy nauchno-prakticheskoy konferencii: 97-99

Alekseenko, A.N. (2001). Problemy demographicheskogo razvitiya Kazakhstana v nachale XXI veka Paper presented in: Etnodemographicheskie processi v Kazakhstane i sopredelnix territorii, Materialy mezhdunarodnoy nauchno-prakticheskoy konferencii: 103-105

Alekseenko, A.N. (2003). Reproductivnie ustanovki zhenshin Vostochno-Kazakhstanskoy oblasti.

Demoscope weekly. 125-126

Alekseenko, A.N. (2004). Strategiya demographicheskogo razvitiya Kazakhstana: regionalny aspect Paper presented in: Etnodemographicheskie processi v Kazakhstane i sopredelnix territorii, Materialy V mezhdunarodnoy nauchno-prakticheskoy konferencii: 33-41

Alekseenko, A.N. (2011). Rost rozhdaemosti vo mnogom opredelyaetsya etnicheskim factorom. Demoscope weekly. 451-452

Antonov, A.I. (1986). Evolyuciya norm detnosti i tipov demographicheskogo povedeniya. In: Rybakovskiy, L.L. *Detnost' sem'i: vchera, segodnya, zavtra.* Moskva: Demographiya: problemy i perspectivy: 10-26

Antonov, A.I. (2003). Modeli rozhdaemosti i sem'i v regionax Rossii. In: Osipov, G.V. *Izmenyayushayasya Rossiya: vyzovy i vozmozhnosti. Socialnaya i socialno-politicheskaya situaciya v Rossii v 2002 godu.*Moskva: RIC ISPI RAN: 293-310

Antonov, A.I. (2005). Sociologiya semii. Moskva: INFRA-M.

Arnold, F., Pejaranonda, C. (1977). Economic Factors in Family Size Decisions in Thailand. *World Fertility Survey*. Survey of Fertility in Thailand Report 2

Aytkazina, Z. N. (2004). Sravnitelnaya kharakteristica reproductivnyx ustanovok gorodskix i selskix zhenshin Vsotochno-Kazakhstanskoy oblasti. Paper presented in: Etnodemographicheskie processi v Kazakhstane i sopredelnix territorii, Materialy V mezhdunarodnoy nauchno-prakticheskoy konferencii: 24-32

Aubakirova, Z.S. (2005). Etnicheskie osobennosti vosproizvodstva naseleniya Kazakhstana (1979-1999) Demoscope weekly. 197-198

Agenstvo po statistike Departamenta statistiki Yuzhno-kazakhstanskoy oblasti (2010). Shymkent: Ob itogax perepisi naseleniya Yuzhno-Kazakhstanskoy oblasti 2009 goda. //www.ontustik.stat.kz/rus/perepis_nas/index.php

Bachrach, C.A. (2001). Comment: The Puzzling Persistence of Postmodern Fertility Preferences. *Population and Development Review* 27, Supplement: Global Fertility Transition: 332-338

Bachrach, C.A., Morgan, S.P. (2011). Further reflections on the Theory of Planned Behavior and fertility research. *Vienna Yearbook of Population Research* 9: 71-74.

Barber, J.S. (2001). The intergenerational transmission of age at first birth among married and unmarried men and women. *Social Science Research* 30: 219-247.

Bankole, A. (1995). Desired fertility and fertility behaviour among the Yoruba of Nigeria: A study of couple preferences and subsequent fertility. *Population Studies* 49(2): 317-328.

Becker. G.S., Baro. R., (1986). Altruism and the Economic Theory of Fertility. *Population and Development Review* 12, Supplement: Below-Replacement Fertility in Industrial Societies: Causes, Consequences, Policies: 69-76.

Becker. G.S., Baro. R., (1988). A reformulation of the economic theory of fertility. *Quarterly Journal of Economics* 103: 1-25

Becker. G.S., Lewis. H.G., (1973) On the interaction between quantity and quality of children.

Journal of Political Economy 84: 279-288

Belova, V.A. (1975). *Chislo detey v sem'e.* Moskva: Statistika.

Belova, V.A., Darsky L.E. (1972). *Statistika mnenii v izuchenii rozhdaemosti.* Moskva: Statistika.

Bedny, M.S. (1972). Demographicheskie processi i prognozy zdoroviya naseleniya. Moskva: Statistika

Bongaarts, J. and S. Watkins (1996). Social interactions and contemporary fertility transitions. *Population and Development Review* 22(4):639-682.

Bongaarts, J. and G. Feeney. (1998). On the quantum and tempo of fertility. *Population and Development Review* 24 (2): 271-291.

Bongaarts, J. (2001). Fertility and reproductive preferences in post-transitional societies. *Population and Development Review* 27*, Supplement* : *Global Fertility Transition*: 260-281.

Bongaarts, J. (2003). Completing the Fertility Transition in the Developing World: The Role of Educational Differences and Fertility Preferences. *Population Council.* Policy Research Division. Workign paper 117

Borisov, V.A. (1976). *Perspectivy rozhdaemosti.* Moskva: Statistika.

Bosveld, W. (1996). The ageing of fertility in Europe: A comparative demographic-analytic study. [PhD thesis]. Amsterdam: The Netherlands Graduate School of Research in Demography

Caldwell, J.C. (1976). Toward a Restatement of Demographic Transition Theory. *Population and Development Review* 2: 321-366

Caldwell, J.C. (1978). A theory of fertility: from high plateau to destabilization. *Population and development review* 4(4): 553-577.

Caldwell, J.C. (2001). The Globalization of Fertility Behavior. *Population and development review* 27, Supplement: Global Fertility Transition: 93-115

Caldwell. J.C., Schindlmayr. T., (2003). Explanations of the fertility crisis in modern societies: A search for commonalities. Population studies 57(3): 241-263

Caldwell. J.C. (2004). Fertility controlling in the classical world: was there an ancient fertility transition? *Journal of Population research* 21(1): 1-17

Casterline, J., Perez, A.E., Biddlecom, A.E. (1997). Factors underlying unmet need for family planning in the Philippines. *Studies in Family Planning* 28(3): 173-191.

Casterline. J. B. (2001). The Pace of Fertility Transition: National Patterns in the Second Half of the Twentieth Century. *Population and Development Review* 27, Supplement: Global Fertility Transition: 17-52.

Chromková Manea, B., Fučík, P. (2011) Couple disagreement about fertility preferences and family-friendly policy measures in the Czech Republic. *Vienna Yearbook of Population Research* 9: 335-344.

Coleman, J.S. 1990. *Foundations of social theory*. Cambridge: The Belknap Press of Harvard University Press.

Das Gupta, P. (1993). Standardization and decomposition of rates: A User's Manual. U.S. Bureau of census. Washington

Dude, A. M. (2005). Recent Trends in Infant Mortality in Kazakhstan: The Result of Discrimination?. University of Chicago

Ezeh, A.C., Seroussi, M. Raggers, H. (1996). Men's fertility, Contraceptive use, and Reproductive preferences. DHS comparative studies 18. Macro International Inc. Carverton. Maryland USA

Fishbein, M. and I. Ajzen 1975. *Belief, attitude, intention and behavior: an introduction to theory and research*. Reading, MA: Addison-Wesley.

Freedman, R. (1997). Do family planning programs affect fertility preference? A literature review. *Studies in Family Planning* 28(1): 1-13

Johnson-Hanks, J., Bachrach, C., Morgan S.P., and Kohler, H.P. (2011). *Understanding family change and variation: structure, conjuncture, and action*. New York: Springer.

Jones, L. E. (2008). Fertility Theories: Can They Explain the Negative Fertility-Income Relationship. University of Minnesota

Giddens, A. (1990). *The consequences of modernity*. United Kindom: Polity Press.

Gimenez, M.E. (1979) Theories of reproductive behavior: a Marxist critique. *Review of radical political economics*. 11(2): 17-24

Gentile, M. (2005). Population geography perspectives on the Central Asian Republics. Stockholm: Institute for futures studies (ISSN 1652-120)

Golovin, N.A. (2004).*Teoretiko-metodologicheskie osnovy issledovaniya politicheskoy socailizacii.* Sankt-Peterburg: Izdatelstvo Sankt-Peterburgskogo universiteta.

Hakim, C. (2003). A new approach to explaining fertility patterns: preference theory. *Population and Development Review* 29(3): 349-374.

Hin, S., Gauthier, A., Goldstein, J., and Bühler, C. (2011). Fertility preferences: what measuring second choices teaches us. *Vienna Yearbook of Population Research* 9: 131-156.

Inglehart, R., Weizel C. (2005). *Modernization, cultural change, and democracy*, *the human development sequence* .New York: Cambridge University Press.

Ibrayeva, M. (2006). Po statistike OON, v 2005 godu naselenie zemli gostiglo 6.5 milliarda chelovek. Newspaper. Gazeta.kz. http://demoscope.ru/weekly/2006/0231/gazeta020.php

International Encyclopedia of the Social & Behavioral Sciences (2001) Elsevier Science Ltd.: Fertility Theory: Caldwell's Theory of Intergenerational Wealth Flows http://anthro.fullerton.edu/jbock/KaplanBock_2001_FertilityTheory.pdf

Kantrow. L. (1980). Some problems in the measurement and analysis of fertility preferences from WFS first country reports. Paper presented in: Regional Workshop on Techniques of Analysis of World Fertility Survey Data. Netherlands.

Kirk, D. (1996). Demographic Transition Theory. *Population Studies* 50: 361-387.

Klobas, J. (2011). The Theory of Planned Behaviour as a model of reasoning about fertility

decisions. *Vienna Yearbook of Population Research* 9: 47-54.

Kohler, H.-P. (2001). *Fertility and social interac*tion, *an economic perspective*. New York: Oxford University Press.

Kotte, M., Ludwig, V. (2011). Intergenerational transmission of fertility intentions and behavior in Germany: the role of contagion. *Vienna Yearbook of Population Research* 9: 207-226.

Kuijsten, A. (1995). Recent trends in household and family structure in Europe: an overview. In: van Imhoff, E., Kuijsten, A., Hooimeijer, P., Wissen, L. Household demography and household modeling. New York. Plenum Press.

Kazakhstanskaya Pravda (July, 2012)

Leibenstein, H. M. (1975). The economic theory of fertility decline. *Quarterly Journal of Economics* 89: 1-31

Leibenstein, H. M. (1975). An interpretation of the economic theory of fertility: promising path or blind alley?. *Journal of Economic Literature* 13: 457-479

Lesthaeghe, R. (2001). Long-term spatial continuities in demographic innovation: insights from the Belgian example, 1846-2000. Population studies center: University of Michigan.

Lesthaeghe, R. and Vanderhoeft, C. (2001). Ready, Willing and Able: The preconditions of demographic innovation; Ready, Willing, and Able: A Conceptualization of Transitions to New Behavioral Forms, http://www.nap.edu/openbook.php

Lesthaeghe, R. (2002). *Meaning and choice: Value orientations and Life course decisions*. Brussels: NIDI CBGS

Lesthaeghe. R., Neidert. L., (2006). The "Second Demographic Transition" in the U.S.: Spatial patterns and correlates. Population Studies Center University of Michigan Institute of Social Research (PSC Research report 06-592)

Legislation of reproductive rights and safeguard for its implementation. (2009). newspaper Kazakhstanskaya Pravda. (June)

MacDonald, K. (1997**).** Life History Theory and Human Reproductive Behavior: Environmental/Contextual Influences and Heritable Variation. *Human Nature 8:*327–359

McDonald, P. Gender equity, social institutions and the future of fertility. *Journal of Population Research* 17 (1): 1-16

McNicoll, G. (1980). Institutional determinants of fertility change. *Population and Development Review* 6(3): 441-462

Meshimbayev, A. (2007). Demographic Yearbook of Kazakhstan. Astana.

Montgomery, M.R., Casterline, J.B. (1993). The diffusion of fertility control in Taiwan: Evidence from pooled cross-section time-series models. *Population Studies* 47(3): 457-479

Montgomery, M.R., Casterline, J.B. (1996). Social learning, social influence and new models of fertility. *Population and Development Review*, *Supplement 22, Fertility in the United States: new patterns, new theories,* ed. J.B. Casterline, R.D. Lee and K.A. Foote: 151-175.

Montgomery, M.R., Casterline, J.B. (1998). Social networks and the diffusion of fertility control.

Population Council, Policy Research Division, Working paper 119

Montgomery, M.R., Chung, W.S. (1998). Social networks and the diffusion of fertility control in the Republic of Korea. In: Leete, R. (ed.) The Dynamics of Values in Fertility Change. Oxford University press: 179-209

Notestein, F.W. (1953). *Economic problems of population changes*. Proceeding of the eight international conference of agricultural economist, New York, 13-31

Miller, W.B. and D.J. Pasta 1995. Behavioral intentions: which ones predict fertility behavior in married couples? *Journal of Applied Social Psychology* 25(6): 530-555.

Miller, W.B. and D.J. Pasta 1996b. Couple disagreement: effects on the formation and implementation of fertility decisions. *Personal Relationships* 3: 307-336.

Miller, W.B. (2011). Comparing the TPB and the T-D-I-B framework. *Vienna Yearbook of Population Research* 9: 19-29.

Miller, W.B. (2011). Differences between fertility desires and intentions: implications for theory, research and policy1. *Vienna Yearbook of Population Research* 9: 75-98.

Morgan, P.S., Bachrach, C. A. (2011). Is the Theory of Planned Behaviour an appropriate model for human fertility? *Vienna Yearbook of Population Research* 9: 11-18.

Notestein, F.W. (1953). *Economic problems of population changes*. Proceeding of the eight international conference of agricultural economist, New York, 13-31

OECD Family Database (2010). Report of OECD-Social policy division Directorate of Employment, Labour and Social Affairs: Ideal and actual number of children, www.oecd.org/els/social/family/database

Philipov, D., Thévenon, O., Klobas, J., Bernardi, L. and Liefbroer, A.C. (2009). Reproductive decision-making in a macro-micro perspective (REPRO): a state of the art review. http://www.oeaw.ac.at/vid/download/edrp_1_09.pdf

Philipov, D. (2011). Theories on fertility intentions: a demographer's perspective. *Vienna Yearbook of Population Research* 9: 37-45.

Poston, D. L., Bouvier, L.F. (2010). Population and Society: an introduction to demography. New York. Cambridge University press.

Robinson, W. C. (1987). The time cost of children and other household production. *Population Studies* 41: 313-323

Robinson, W. C. (1997). The Economic Theory of Fertility Over Three Decades. *Population Studies* 51: 63-74

Rosenzweig, M. R. (1990). Population growth and human capital investments: Theory and evidence. *Journal of Political Economy* 98(5/2): 38-70

Rybakovskiy, L.L. (1986). *Detnost' sem'i: vchera, segodnya, zavtra*. Moskva: Demographiya: problemy i perspectivy.

Sewell, W.H. (1992). A theory of structure: duality, agency, and transformation. *American Journal of Sociology* 98(1): 1-29.

Schultz, T. P. (1997). The demand for children in low income countries. In Rosenzweig, M.R., Stark, O. (eds), Handbook of Population and Family Economics. Amsterdam: North Holland: 349-433

Sobotka, T. (2011). Reproductive Decision-Making in a Macro-Micro Perspective (REPRO) Synthesis and Policy Implications. Vienna Institute of Demography

Surkyn, J., Lesthaeghe, R. (2004). Value Orientations and the Second Demographic Transition (SDT) in Northern, Western and Southern Europe: An Update. *Demographic research* 3(3): 45-86

Sdykov, M.N. (2005). Demographicheskie processi 1990-x godov v Kazakhstane: krizis ili novye realii. In: Alekseenko, A.N. *Reproductivnye ustanovki zhenshin Vostochno-Kazakhstanskoy oblasti.* Ustkamenogorsk: 278-303

Sherbakova, E. (2009). Koefficient summarnoy rozhdaemosti v 2005-2010 godax variruentsya po stranam SNG on 1.3 do 3.5 rebenka na zhenshinu, no k seredine veka eti razlichiya sushestveno sokratyatsya. Demoscope weekly. 381-382

Sherbakova, E. (2009). Sovokupnaya chislennost naseleniya stran SNG, po srednemu variant prognoza, k 2050 godu snizitsya s 277 do 257 millionov chelovek. Demoscope weekly. 381-382

Sherbakova, E. (2010). Na fone dolgovremenogo snizheniya rozhdaemosti v nekotoryx stranax SNG otmechalis priznaki ee kolebatelnogo povysheniya. Demoscope weekly. 381-382

Sherbakova, E. (2011). Smertnost v stranax SNG v 2005-2009 godax snizhalas, no ostaetsya sravnitelno vysokoy. Demoscope weekly. 451-452

Sherbakova, E. (2011). V 2010 godu ozhidaemaya prodolzhitelnost zhizni po prezhnemu uvelichivalas, no vnov' stali rasti chislo umershikh I obshiy coefficient smertnosti. Demoscope weekly. 457-458

Smailov, A.A. (2001) Itogi perepisi naseleniya 1999 goda po Yuzhno-Kazakhstanskoy oblasti. Almaty

Smailov, A.A. (2011). Demographic Yearbook of Kazakhstan. Astana.

Shaymanov, B.S. (2008). Yuzhno-Kazakhstanskay oblast i ee region. Shymkent.

Shokamanov, Yu. (2006). Kazakhstan i strany SNG. Almaty.

Strany Baltii i SNG. (2012). Koefficient summarnoy rozhdaemosti, 1960-1999 Demoscope weekly. 517-518. http://www.demoscope.ru/weekly/ssp/sng_tfr.php

Sultanov, B. (2006). Demographicheskiy ezhegodnik regionov Kazakhstana. Statisticheskiy sbornik

Testa, M. R., Sobotka, T., and S. Philip Morgan. (2011). Reproductive decision-making: towards improved theoretical, methodological and empirical approaches. *Vienna Yearbook of Population Research* 9:1-9.

Testa, M.R. (2006). Childbearing preferences and family issues in Europe. Special Eurobarometer 253/Wave 65.1, TNS Opinion & Social.

http://ec.europa.eu/public_opinion/archives/ebs/ebs_253_en.pdf

Testa, M. R., Cavalli, L., Rosina, A. (2011). Couples' childbearing behaviour in Italy: which of the partners is leading it? *Vienna Yearbook of Population Research* 9: 157-178.

Thomson, E. (1997). Couple childbearing desires, intentions, and births. *Demography* 34(3): 343-354

Thomson, E., Hoem, J. M. (1998). Couple childbearing plans and births in Sweden. *Demography* 35(3): 315-322.

Tendecii izmeneniya sostoyaniya reproductivnogo zdoroviya zhenshin v Vostochnoy Europe in Evrazii. (2005). Demoscope weekly. 205-206. http://demoscope.ru/weekly/2005/0205/analit01.php

Topilin, A. (2002). Demographicheskaya situaciya v stranakh SNG: kak izmenyalas chislennost naseleniya. Demoscope weekly. 63-64.

Van de Kaa, D. (1987). Europe's Second Demographic Transition. *Population Bulletin* 42(1): 3-59

Van de Kaa, D. (2001). Postmodern fertility preferences: from changing value orientation to new behaviour. *Population and Development Review* 27: 290-331.

Van de Kaa, D.J. (2002) *The idea of a second demographic transition in industrialized countries*. Paper presented at the Sixth Welfare Policy Seminar of the National Institute of Population and Social Security, Tokyo, Japan, 29

Van de Kaa, D.J. (2006) Temporarily New: On Low Fertility and the Prospect of Pro-natal Policies. *Vienna Yearbook of Population Research* 9: 193-211.

Valitova, Z.Kh., Yessimova, A.B. (2006). Analiz reproductivnogo povedeniya zhenshin i muzhchin yuga Kazakhstana. Gendernye issledovaniya. Regionalnaya antologiya issledovaniy iz vos'mi stran SNG: Armenii, Azerbaydzhana, Gruzii, Kazakhstana, Kyrgyzstana, Moldovy, Tadjikistana i Uzbekistana. Moskva: 390-411

Valitova, Z.Kh. (2010). Reproductivnye ossobennosti povedenie semii v Kazakhstane. *Philosophy: The International Scientific and Theoretical Journal* 1(14) Baku: 275-282

Volkov, A.G. (1968). *Rojdaemost' i ee factory.* Moskva: Statistika.

Vovk, E. (2007). Kolichestvo detey v sem'e: ustanovki i reproductivnoe povedenie. *Social'naya realnost* 1: 21-29

Vishnevsky, A. (2003). Demographiya stalinskoy epokhi. *Naselenie i obshestvo* 70: 1-7

Vishnevsky, A. (2005). Demographicheskiy krizis v stranakh SNG: krizis rozhdaemosti. Demoscope weekly. 197-198

Wachter, D., Neels, K., (2011). Educational differentials in fertility intentions and outcomes: family formation in Flanders in the early 1990s. *Vienna Yearbook of Population Research* 9: 227-258

Westoff, C.F., Ryder, N. B. (1977). The predictive validity of reproductive intentions. *Demography* 14(4): 431-453.

Westoff, C.F., Rodriguez, G. (1995). The mass media and family planning in Kenya. International

Family Planning Perspectives 21 (1): 26-31

Westoff, C.F., Bankole, A. (2002). Reproductive preferences in developing countries at the turn of the century. *DHS Comparative report* 2 ORC Macro. Carverton. Maryland USA

World Population prospect. United Nation Population Division (2010). http://demoscope.ru/weekly/ssp/sng_2050.php

Yessimova, A.B. (2005). Demographicheskoe povedenie naseleniya Yuzhno-Kazakhstanskoy oblasti (po materialam sociologicheskix issledovaniy) Paper presented in: Realii i prognozy demographicheskogo razvitiya Evraziiskogo prostranstva. Materialy mezhdunarodnoy nauchno-practicheskoy konferencii. Uralsk.

Yessimova, A.B. (2005). Stereotipy i phenomeny v reproductivnom povedenii naseleniya Kazakhstan. Zhenskoe dvizhenie v Centralnoy Azii: ot opyta proshlogo desaytiletiya k poisku novyx tekhnologiy. Almaty

Yessimova, A.B. (2005). Politika v oblasti rozhdaemosti v Respublike Kazakhstan. In: Elizarov, V.V., Arkhangelsky, V.N., Politika Narodonaseleniya: nastoyashee i budushee: Chetvertie Valenteevskie chteniya: Sbornik dokladov. MAKS press: 94-99

Yessimova, A.B. (2006). *Osobennosti reproductivnogo povedeniya i problemy realizacii reproductivnyx prav zhenshin Kazakhstana*. Shymkent: Gasyr-Sh.

Yessimova, A.B. (2006). Osnovnye characteristiki reproductivnogo povedeniya zhenshin Kazakhstan Demoscope weekly. 245-246

Zhumatova, M.G., Lokshin, V.N. (2010). Problemy reproductivnogo zdoroviya zhenshin v Respublike Kazakhstan. Journal *Problemy reproduccii* 3: 24-27

Zhumasultanov, T. Z. (2005). Narod Kazakhstana. Almaty. ISBN 9965-931550

Annex

Number of questionnaire_____

Section 1. Parents of couples

1. How many children do your parents have?

1. Total_____ from them:
2. Males (boys)_____
3. Females (girls)

2. What is the education level of your parents?

		Mother	Father
1	Primary	1	2
2.	9 classes of Secondary School	1	2
3.	Secondary School	1	2
4.	Professional school or college	1	2
5.	Bachelor	1	2
6.	Correspondence University	1	2
7.	University or Institute	1	2
8.	Different answer (specify)	1	2

3. Where did your parents live longer?
1. Metropolis
2. City
3. Town
4. Village
5. Different answer (specify)_____

4. Where did your parents live longer?
1. Metropolis
2. City
3. Town
4. Village
5. Different answer (specify)_____

5. According to language differences in which school did you study?
1. Kazakh
2. Russian

3. Uzbek
4. Different answer (specify) _____

6. What is your education level?

1. Primary
2. 9 classes of Secondary School
3. Secondary School
4. Professional School or College
5. Bachelor
6. Correspondence University
7. University or Institute
8. Different answer (specify)

7. What is your specialty? (Write, please)_____

Section 2. Marriage

8. When you got married, how old were you (first marriage)? _____age

9. Is your current marriage first? (Specify order)

1. Yes
2. No, this mine _____marriage

10. How many years are you in current marriage?

_____years

11. How do you think, what is the best (ideal) age to get into marriage?

1. For males_____ age
2. For females_____ age

12. What was the reason for you to be marry (current marriage)? (only two answers allowed)

1. Love
2. Societal rules
3. Family insist
4. In order to give a birth
5. To get independence from parents
6. To improve financial situation
7. It is better to be marry than live alone
8. Because of age
9. Because of pregnancy
10. Different answer (Write, please)_____

13. Did you get approval from your parents for marriage?

1. Yes, I got agreements from parents
2. No, I decided by myself

3. Different answer (specify)_____

14. In your opinion, where is better to live for young family?

1. With parents-in-law of husband
2. With parents-in-law of wife
3. On their own
4. Different answer (specify)_____

15. How did you meet your husband (wife)?

1. Parents introduced
2. We met each other by ourselves
3. Kidnapped bride
4. Different answer (specify)_____

16. How many people in your family now? _____amount of people

17. Who besides you, your husband (wife) and your children live with you?
1. Nobody
2. Farther in law (husband)
3. Mother in law (husband)
4. Father in law (wife)
5. Mother in law (wife)
6. Grandparents husband/wife
7. Brothers and sisters of husband
8. Brothers and sisters of wife
9. Different answer (specify)_____

18. Where did you live after marriage?
1. With my parents
2. With parents of my wife (husband)
3. In my dwelling
4. In dwelling of my wife (husband)
5. Rented apartment
6. In dormitory
7. We lived separately for a while, although already were married
8. Different answer (specify) _____

19. What is more important for you?

		Very important	Important	Not important	Hard to answer
1.	To feel love	1	2	3	4
2.	To get respect of surrounding	1	2	3	4
3.	To create family	1	2	3	4
4.	To be educated	1	2	3	4
5.	To have interesting job	1	2	3	4
6.	To grow up children	1	2	3	4

7.	To educated children	1	2	3	4
8.	To live in normal/acceptable conditions	1	2	3	4

Section 3. Family and relatives ties (Questions from 20 to 24 related to responsibility and help between relatives)

Section 4. Reproductive attitudes and behavior

25. Do you have children and how many?

1. No child (go to next question)
2.

		1. **Sex**	**2. Age**
1.	First		
2.	Second		
3.	Third		
4.	Fourth		
5.	Fifth		
6.	Sixth		
7.	Seventh		
8.	Eighth		
9.	Ninth		
10.	Tenth		

26. How many children do you plan, including you already have?

1. Total_____
2. From them:
3. Boys_____
4. Girls_____

27. If you do plan to have a child, the child sex is matter?

1. Boy
2. Girl
3. No matter
4. I do not have a plan

28. Who is participated in reproductive decision making?

1. Me
2. Husband (wife)
3. My parents
4. Parents of husband (wife)
5. My relatives
6. Relatives of husband (wife)
7. Different answer (write, please)_____

29. What is the best interval between births? _____

Questions 30 and 31 related to the timing of maternity leave

32. What is the ideal number of children per family?
1. Total_____

From them:
2. Boys_____
3. Girls_____
4. No one

33. What is desired number of children if you had all affordable conditions (dwelling, job, money and etc)?
1. Total_____
2. Boys_____
3. Girls_____
4. Nobody

34. What kind of condition do you need for giving birth?
1. No condition need, I will give birth
2. With better dwelling conditions
3. With financial income increased
4. With better job
5. With well understanding and good relation in family
6. Does not matter we are not plan to have a child
7. With better health
8. With government support
9. Different answer _____

35. How many children did you plan before getting into marriage?
1. _____number of children

2. Nobody 3. Hard to answer

36. How many children would you recommend to have for your children?
1. Son_____ number of children
2. Daughter_____ number of children
3. Nobody
4. Different answer (specify) _____

37. At what age is it better to give a birth for woman?
1. First birth _____age
2. Youngest (or last) birth _____age

38. If you would not be able to give a birth what will you do?
1. Would take from orphanage
2. Would take from relatives
3. Agreed with childlessness
4. Would tried «assistant reproduction»
5. Would turned to surrogate mother
6. If the problem with husband (wife) I would divorced
7. Different answer (write please)_____

39. What will you recommend to the parents of unmarried female who got pregnant?
1. To insist on marriage and reach it
2. To have an abortion
3. To give a birth even if she would not marry
4. To give a birth and then to leave a child in orphanage
5. Different answer (specify)_____

40. With how many children do you consider large family?
_____number of children

Section 5. Interaction between members of family and their values (Questions from 41 to 50 related to familial occasions and leisure)

Section 6. Children, parenting (Questions from 51 to 61 related to variety approaches of upbringing and educated children)

Section 7. Job and career (Questions from 62 to 70 related to importance of career in life of respondents)

Section 8. The economic situation.

71. Who is earning more money in your family?
1. Husband
2. Wife
3. Children
4. Different answer (specify)_____

72. How do you evaluate financial situation of your family?
1. Very good, no needs at all
2. Good, almost covering all our needs
3. Essentially not bad, but to purchase expensive items need to borrow
4. For every day needs the income is enough, but to buy clothes we cope with difficulties
5. For every day needs all wages are spent
6. The income not enough, we required to borrow regularly
7. Different answer (specify) _____

73. Which amount of wage per month would be enough for you? _____KZT.

74. What is your income per month?

Wage	Code
Less than 10 000 KZT	1
10 001 - 20 000 KZT	2
20 001 - 30 000 KZT	3
30 001 - 40 000 KZT	4
40 001 - 50 000 KZT	5

50 001 - 60 000 KZT	6
60 001 - 70 000 KZT	7
70 001 - 100 000 KZT	8
100 001 - 120 000 KZT	9
121 000 - 150 000 KZT	10
150 001 – 200 000 KZT	11
Above than 200 001 KZT	12
Refused to answer \ hard to answer	13
I do not have own income/wage	14

75. Are you satisfied with dwelling (apartment) conditions?
1. Totally
2. Rather satisfied than not
3. Equally
4. Rather unsatisfied
5. Totally unsatisfied
6. Hard to answer

76. What is the total area of your apartment and how much room is your home?
1. Area (approximately) _____(specify)
2. Number of rooms _____(specify)

77. From whom would you ask help at first if there was an urgent problem?
1. Relatives
2. Friends
3. Colleagues
4. Financial organization (Bank, pawnshop)
5. Different answer (specify)_____

Section 9. Contraceptive behavior (Questions from 78 to 84 related to contraceptive behavior of respondents, if they ever accepted contraceptive use, for females if they did abortion)

Section 10. The main characteristics of respondents

85. In which language do you talk between members of your family?
1. Only in Kazakh
2. Mostly in Kazakh, and sometimes in Russian
3. Equally in Kazakh and Russian languages
4. Mostly in Russian, and sometimes in Kazakh
5. Only in Russian
6. Different answer (specify)_____

86. How is religion important to you?
1. No importance
2. Not to much extent of importance
3. Relatively important

4. Very much important
5. The main principle of life

87. What kind of religion you confess?
1. Islam
2. Christianity
3. Different answer (specify)_____
4. No one

88. Specify please your sex? 1. male 2. female

89. Specify please your ethnicity
1. Kazakh
2. Russian
3. Different answer *(write please)* _____

90. How old are you _____